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ALBERTA ECONOMIC DEVELOPMENT
AND TOURISM

BEAVERHILL NATURAL AREA VISITOR MANAGEMENT PLAN

HLA CONSULTANTS
BUTLER KREBES & ASSOCIATES
GAIA CONSULTANTS

Alberta
ECONOMIC DEVELOPMENT
AND TOURISM

TO WHOM IT MAY CONCERN:

Alberta Economic Development and Tourism is pleased to release this study titled: *Beaverhill Natural Area Visitor Management Plan*.

Much of Alberta's tourism both depends on, and affects the quality of the natural environment. Alberta Economic Development and Tourism is interested in facilitating environmentally sensitive developments.

Beaverhill Lake is an internationally recognized bird staging and migration area with great wildlife viewing potential. It is also located in close proximity to Edmonton, a major metropolitan area. Optimizing the quality of the visitor experience has to be balanced not only with preserving wildlife integrity but also with protecting neighbouring landowners' needs. This study establishes visitor management guidelines in order to direct Beaverhill Lake's success as a sustainable attraction.

The approach developed for preparing a *visitor management plan* can now be adapted and utilized at other locations where compatibility with wildlife objectives is fundamental to the visitor experience.

It should be noted that this study was conducted by independent consultants commissioned by Alberta Economic Development and Tourism. As such, this study does not represent government policy nor does it imply any commitment to implementation at this time.

The Government of Alberta disclaims any liability in negligence or otherwise for any loss or damage which may occur as a result of reliance upon the material contained in this study.

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Yours sincerely,

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AND TOURISM

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VISITOR MANAGEMENT PLAN

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July, 1995

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HLA Consultants, Butler Krebes and Associates, and GAIA Consultants
"Beaverhill Natural Area Visitor Management Plan"

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EXECUTIVE SUMMARY

The study area portion of the Beaverhill Natural Area (360 ha.), encompasses Lister Lake and is located at the southeast corner of Beaverhill Lake near the Town of Tofield. Because of the anticipated use of the Natural Area, it has become necessary to establish appropriate uses of the land and visitor behaviours that will protect the site. The Natural Area has international recognition as a bird staging and migrating area (over 200 species of birds have been observed in the area). The Natural Area also contains the first bird banding observatory in Western Canada (Beaverhill Bird Observatory - BBO). It currently has very limited visitation and most visits occur at the time of the annual Snow Goose Festival.

Planning for the Beaverhill Natural Area is coordinated through a stakeholder group that is comprised essentially of those who have jurisdiction and/or a vested interest in the site. This includes local representatives, landowners, provincial government departments, and nature organizations.

The research methods used in this study were:

1. conduct literature review;
2. hold stakeholder workshops;
3. personally interview stakeholders;
4. identify issues and management objectives;
5. define desired conditions, indicators and units of measurement; and
6. develop management strategies.

The purpose of visitor management is to identify appropriate access, circulation, and behaviours of visitors such that their satisfaction is optimized within the constraints of the environment they are visiting, and the preferences of the nearby communities. There were two principal management objectives identified by the stakeholders:

i) maintain the integrity of the resources upon which the visitor experience is based; and
ii) assure that visitors have an enjoyable experience.

This summary presents, by major topic, the principal elements of the visitor management strategy.

Maintaining Desired Biophysical Conditions

Four specific objectives were developed that reflect the desired biophysical conditions for the study area:

1. maintain and enhance the nature and quality of existing study area habitats;

2. maintain and enhance the study area's wildlife productivity and natural diversity;
3. minimize human impact on wildlife productivity and natural diversity; and
4. develop public appreciation and support for the protection and conservation of the area's natural resources.

- It is recommended that an ecological inventory of the area be prepared to include an ecological base map that considers the interrelationships among environmental factors. This inventory should be accompanied by a follow-up program to map changes in the distribution and extent of study area habitats.

- Similarly, an inventory of wildlife use, accompanied by a monitoring program, to document changes in study area habitats, wildlife use, and wildlife response to disturbance is required. The inventory and monitoring programs should be coupled with a visitor code of wildlife viewing ethics and educational programs that encourage appreciation and respect for the area's biophysical resources.

Maintaining Desired Social Conditions

This refers to impacts on the adjacent landowners. As expressed by the landowners, the desired social conditions are:

1. an all weather road access to the Natural Area, but not highway standard or paved;
2. safety on the route between the Natural Area and Town;
3. a litter free environment along the road and at the Natural Area;
4. no disruption in the farming activities of the farmers or at their residences;
5. minimized conflict between the multiple users of the resources.

- Desired social conditions need to be monitored closely though annual structured interviews with landowners and through the set-up of a mechanism by which landowners can observe and report incidents and/or impressions;

Maintaining the Desired Visitor Experience

In the stakeholder interviews and workshops the desired visitor experience objectives were expressed as follows and ranked in order of importance:

1. minimize pressure on area, yet encourage visitation and maintain visitor satisfaction;
2. provide an educational/interpretive experience for visitors;
3. practice appropriate visitor behaviour and ethics;
4. optimize visitor satisfaction (while protecting the resource)
   a) provide parking
   b) provide amenities such as picnic sites, children play area near parking site, benches, toilets, etc.)
   c) provide viewing mounds and walking trails;

5. communicate with effective non-obtrusive signage and brochures;
6. optimize economic opportunities; and
7. broaden season of use.

- Specific recommended activities include monitoring and recording visitor use at specific locations (including counts), observing and recording visitor activities and comments, and conducting random visitor surveys.

Development Plan

The key physical plan development objectives are to:

1. avoid and minimize disturbance of key species areas when locating trails;
2. maintain existing drainage patterns (during facility construction);
3. decrease impact of human waste (visual smell);
4. provide good viewing opportunities while minimizing disturbance factors;
5. provide access to water for pedestrians (while avoiding sensitive sites);
6. provide access for service vehicles separate from pedestrian access to minimize pedestrian/vehicle conflict;
7. provide rest areas on site; and
8. provide pedestrian access (trails) to appropriate areas of the site (improve accessibility and decrease random walking).

- The principal development elements include: an established parking area; boardwalk development and a trail section in wet areas; a viewing tower, platform and screens; loop trails along defined pathways; upgrading of Rowan's Route access road; a new service access route entering the NW corner of the Natural Area; and amenities for visitor comfort.

- It is recommended that the visitor experience to the Natural Area and other viewing areas in the vicinity should begin and end at the Nature Centre.

- The Nature Centre should assume the function of informing and directing visitors. All highway signage on the major access highways should direct visitors to the Nature Centre in Tofield.

- Interpretive guides need to be available to tour people through the Natural Area and to encourage proper behaviour.

- Interpretive and viewing experiences should be extended beyond the Natural Area to include other sites on the Lake and private farm lands. This will enhance the visitor experiences and lessen site pressure on the Natural Area.

- landowners should be encouraged to follow practices that encourage wildlife to make use of their lands and have visitors directed to these sites.

Implementation Strategy

- It is recommended that all of the stakeholders should continue to play a major role in providing direction to the implementation strategy through the meetings of the stakeholder committee.

- Responsibility for management of the biophysical resource and wildlife productivity should continue to rest with Wildlife Management, but should only be undertaken with full discussion, cooperation, and agreement of the other stakeholders.

- The stakeholder group should convene a meeting specifically to review the following recommended roles and responsibilities, make modifications as necessary, and begin the process of formalizing whatever may be required administratively for implementation to begin.

- A "custodian" role needs to be clearly assigned to the parties that are more directly involved with the "day to day" caretaking concerns of the Natural Area and with responsibility for development and maintenance of the tourism infrastructure. The key parties who should assume this role are the Town of Tofield, the BBO, Ducks Unlimited, and the County of Beaver. They would then have ultimate responsibility for visitor management and monitoring and also for maintenance of social conditions. These operations would be delivered through the Nature Centre. Agriculture, Food and Rural Development (A.F.R.D.) has indicated their willingness to negotiate such an arrangement and have also indicated that this could be done through dispositions.

- Monitoring social conditions, including administration and recording of surveys should be the responsibility of the Nature Centre, and the guides in particular.

- Responsibility for monitoring visitor satisfaction and activities rests with the Nature Centre and, in particular, the guides.

- The ecological inventory and monitoring changes in study area habitats should be a joint responsibility between the Parks Management Support, A.F.R.D., Wildlife Management, the BBO, and the Nature Centre.

- Bird inventory should be a responsibility assumed by the Nature Centre with assistance in design and set-up from stakeholders with that expertise and mandate.

- Mapping of seasonally important areas for staging, nesting, feeding, loafing, and moulting waterfowl should be entrusted to the Nature Centre, with help from the BBO and design assistance from other stakeholders.

- Monitoring waterfowl behaviour to visitor presence should be a responsibility of the BBO and the Nature Centre personnel, particularly the guides.

Conclusion

With its' international recognition for waterfowl staging and production, the Beaverhill Natural Area has excellent potential to become a major attraction. The stakeholders, in particular the adjacent landowners, have tremendous pride in this resource and, while they enjoy "showing it off", they want to see the resource protected and not degraded through overuse and improper use. With proper implementation and commitment, this plan will be effective in realizing both objectives of resource preservation and visitor satisfaction. This commitment and interest is very evident.

1.0 INTRODUCTION

1.1 Background

The Beaverhill Natural Area is comprised of the Dekker islands, Pelican Islands, and the land surrounding the reservoir locally known as Lister Lake. The study area is the land around Lister Lake located at the southeast corner of Beaverhill Lake. The site consists of two parcels of land that are separated by Lister Lake. The western portion is most used and is the location of the Beaverhill Bird Observatory (BBO). The west site is also used by bird watchers and on occasion, bird watching tours. The eastern portion of land is accessible by a road right-of-way and has limited current use. Because of the anticipated use of the Natural Area, it has become necessary to establish appropriate uses of the land and to establish management practices that will protect the site and at the same time provide the bird watching opportunities that are so important to the area.

Beaverhill Lake is an internationally recognized bird staging and migration area (Ramsar Site), recognized by the International Union for Conservation of Nature in 1987 for its significant waterfowl and shorebird migration areas. It was also designated as a National Nature Viewpoint in 1981 by the Canadian Nature Federation. The area has, to date, had little infrastructure development to manage visitors and, as well, limited marketing has been done to make people aware of its tremendous wildlife viewing potential.

The south side of the lake, located relatively close to Tofield (see Figure 1), has for many years been recognized by a few "avid birders" as a spectacular resource. However, most people in the large Edmonton metropolitan area are not aware that this resource exists in such close proximity to them, since the Snow Goose Festival has been virtually the only focus of promotion.

The study area has long been recognized as having prime habitat for the staging and nesting of wildlife, in particular waterfowl. A very large number of all bird species are found in the area (over 250 species of birds have been observed in the area). It is also recognized for its deer habitat. In 1986, approximately 360 ha. in the Lister Lake area were designated as a natural area. Originally, the land that is now designated as Natural Area was leased to farmers for grazing purposes.

As Alberta public land, designated as a natural area under the Wilderness Areas, Ecological Reserves and Natural Areas Act, the public has access to the area. The only thing that can limit public access is the level of infrastructure development on the Natural Area. It is well recognized that visitor management at the site is critical to assuring that the resource values of the site are not degraded. The Rural Development Division of Alberta Agriculture, Food and Rural Development (A.F.R.D.) has responsibility for managing the site, with input from the Wildlife Management Division and Parks Management Support of Alberta Environmental Protection.

The Natural Area contains the first bird-banding observatory in western Canada (Beaverhill Bird Observatory). Through their presence on the site, they have acted as the stewards of the Natural Area. Ducks Unlimited Canada have for many years assumed a key role in habitat management of the area. In particular, they built and manage a weir that keeps the Lister Lake area as a wetland for bird nesting and migration. Both of these organizations have key roles that are critical to the preservation of the resource, maintaining the significance of the resource internationally, and contributing to the visitor interpretation of the Natural Area.

Recent research clearly demonstrates that there is a very large potential, and somewhat frustrated demand for wildlife viewing opportunities (HLA Consultants, et. al., Marketing Watchable Wildlife Tourism In Alberta, 1990). A resource, such as Beaverhill Lake, in close proximity to a major metropolitan area, has a very significant unrealized potential.

Marketing campaigns, aimed at creating awareness of the resource and how to go about enjoying it, would be effective in realizing this potential demand and, consequently, result in economic benefits to the town of Tofield and County of Beaver. However, management of the resource is important to sustain the very factor upon which the visitor experience is based and, thereby, sustain the quality of the experience for the visitor.

This study recognizes the interest by the Town of Tofield and County of Beaver to invest in enhancements and marketing and at the same time the importance of properly managing the resource. Consequently, the study focused on developing a visitor management plan that strives to protect the integrity of the resource while optimizing the quality of the experience for the visitor. The timing of this management plan was very opportune in that it was done prior to extensive development of the Natural Area and visitor utilization.

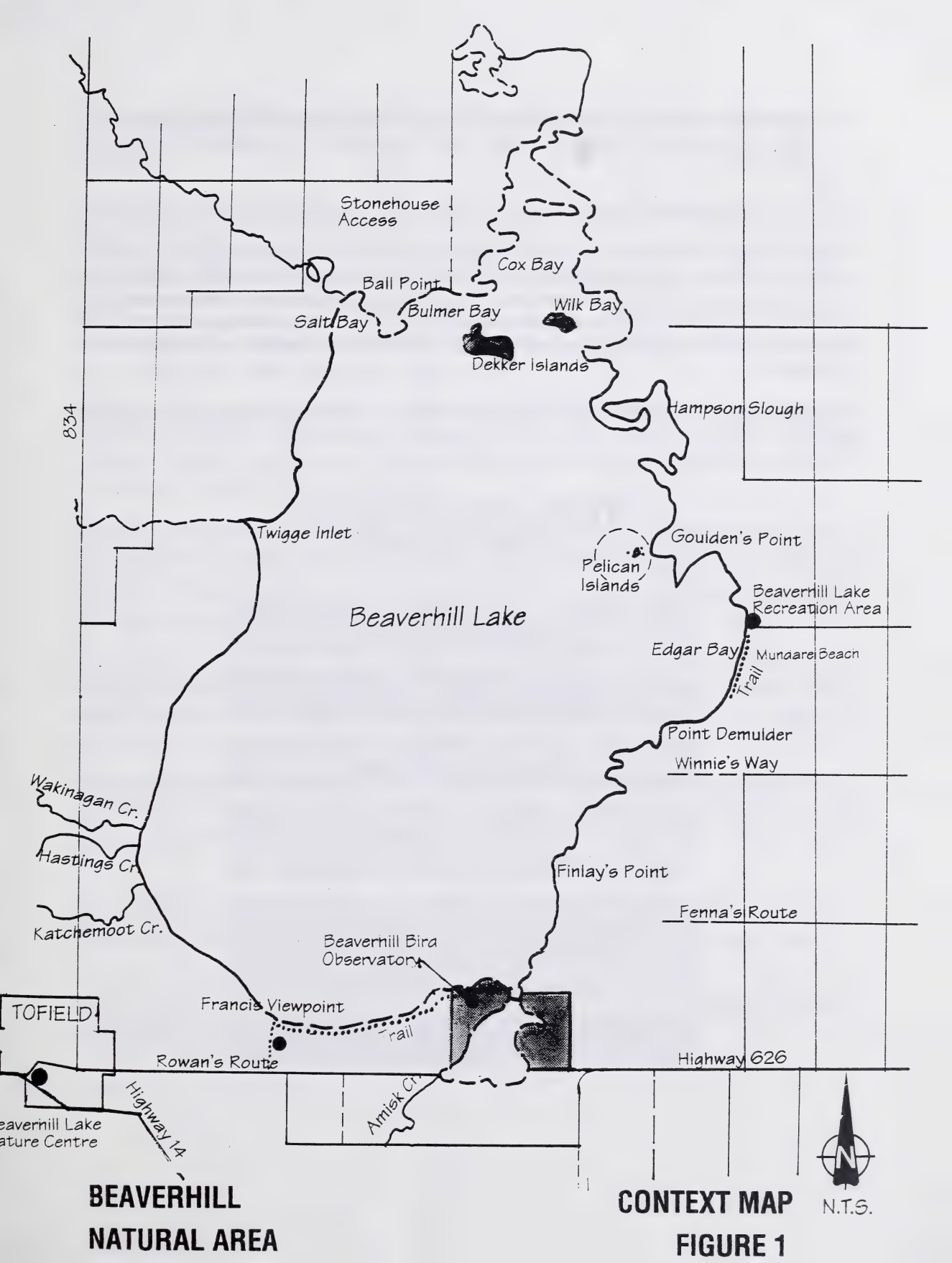
1.2 What We Set Out to Achieve

The main purpose of this project was to prepare a visitor use management plan for directing proper use and proper visitor behaviours and ethics at the Lister Lake section of Beaverhill Natural Area, and the adjacent grazing permit lands. An additional purpose was to address assessing, managing, and monitoring visitor impacts upon wildlife, water quality, grazing, soils, vegetation and the visitor experience

More specific objectives were to:

- develop, adapt, implement and document an approach for preparing a "visitor impact management plan" that can be adapted and utilized at comparable locations;

- prepare a management plan that addresses issues of use, access and managing activity patterns over time and space; and



BEAVERHILL NATURAL AREA

CONTEXT MAP

N.T.S.

FIGURE 1

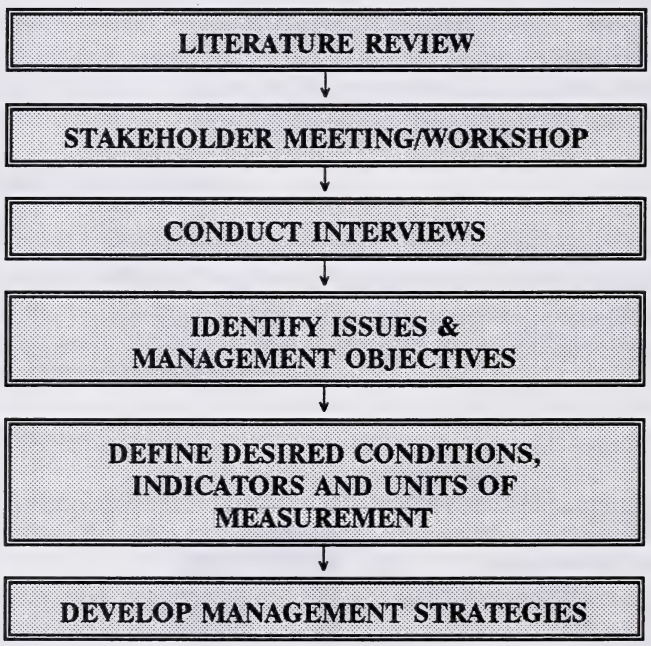
- develop strategies that are compatible with wildlife and resource integrity objectives, but which support low impact use, such that the quality of the visitor experience is maintained.

1.3 How We Achieved It

The preparation of a detailed visitor management plan for so significant an area that has so much visitor potential has, prior to this, never been done in Alberta. The methodology was, therefore, developed from a review of visitor impact management strategies prepared for US areas and adapted to the Beaverhill Natural Area. Given the unique nature of this project, we necessarily maintained a flexible approach that was modified and evolved as we proceeded.

Simply depicted, the methods were as presented in the following study methodology flow chart:

STUDY METHODOLOGY FLOW CHART



Literature review: This included a review of literature and data relevant to the site. An annotated bibliography of the more relevant literature reviewed is presented in Appendix I.

Stakeholders Meeting Workshop: The stakeholder group is comprised of essentially all who have jurisdiction and a vested interest in the Beaverhill Natural Area. This includes local municipal representatives, landowners, provincial government departments, and nature organizations. Refer to Appendix 2, for a list of stakeholders who were interviewed. This stakeholder group played an important role in providing information required for completing this visitor management strategy and, through two workshops, in reviewing, prioritizing, and defining factors critical to an effective strategy. Appendix 2 also presents the list from which workshop attendees were drawn.

Interviews and Site Visits: Individual interviews were conducted with all stakeholders as well as others who had information. Site visits were made to become familiar with the Natural Area and surroundings. Appendix 3 presents the interview format and appendix 4 presents a summary of interview results.

Identify Issues (Desired Conditions) and Management Objectives: Through the workshops, the literature review, and the interviews, the key management objectives for the Beaverhill Natural Area were identified. As well, the critical issues were identified, categorized and prioritized. This was an important step that led to development of desired conditions and the subsequent strategies.

Define Desired Conditions, Indicators, and Units of Measurement: From the issues and management objectives, it was possible to define very specific objectives (statements of desired conditions). For each of the objective statements, indicators of its level of achievement were identified and then units and methods of measurement were developed.

Develop Management Strategies: This final step was completed with the participation of the stakeholder group in a workshop setting. It involved developing specific strategies and their monitoring in the areas of biophysical, social, visitor experiences, and structural infrastructure.

It is important to note that the Natural Area is only a very small area around a very big Beaverhill Lake that has many other excellent wildlife viewing opportunities. The visitor management plan was done only for the Beaverhill Natural Area around Lister Lake.

It is also important to note that this is a visitor management plan and not a wildlife and habitat management plan. Again, because of the complex but definite relationships, it was often difficult to separate them and not broaden the context of the plan.

2.0 MANAGING VISITOR ACTIVITIES IN THE NATURAL AREA

This chapter addresses the management of visitor activities and behaviour in the Beaverhill Natural Area. It begins with examining the rationale for visitor management and then goes on to address how the visitors should be first directed to the Nature Centre in Tofield and to the site, and then how they should behave at the site. This is then followed with a recommended site plan for the Natural Area. The basis for the recommendations and plans presented in this chapter are derived from the methods described above and presented in the text that follow.

2.1 Why Visitor Management?

The purpose of visitor management is to identify appropriate access, circulation, and behaviours of visitors such that their satisfaction is optimized within the constraints of the environment they are visiting and the preferences of the nearby communities. In the case of the Beaverhill Natural Area there were two principal management objectives that were identified:

i) maintain the integrity of the resources upon which the visitor experience is based; and
ii) assure that visitors have an enjoyable experience.

The specific reason this visitor management plan is required is that there is a significant resource in a relatively small area and it is biophysically sensitive. In other words, increased visitation could easily upset the sensitive natural balance of the area and thereby degrade the resource. At present, the numbers and behaviours of visitors to the natural area are such that most people who know and spend time at the area consider the visitor impacts to be relatively limited.[1]

With the current lack of visitor management at the Natural Area, the resource is not being protected and nor is the visitor experience as enjoyable as it could be. It is fortunate that with no visitor management in place, to date, very few visitors have visited the area and most have been relatively avid birders who follow a code of behaviour that is sensitive to the resource.

The area has not been promoted, and this lack of awareness, other than with more avid birders, has kept visitor numbers low. No record of visitors to the Natural Area is kept. However, it is estimated the number attending during the weekend of the Snow Goose

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[1]. That is not to say there are currently no impacts, indeed, there are some (e.g. birds are observed flushing when visitors walk near the shoreline). However, the extent and nature of impacts is unknown, but not considered to be major.

Festival in April is approximately 4000 (organizers Snow Goose Festival) and that this number is increasing every year. At the Snow Goose Festival time visitors meet in Tofield and proceed to the site by bus. Most of the visitors to the Natural Area at other times of year come by private vehicle. No counts of these visitors are kept, but it is estimated that their numbers are very low. For example, the BBO estimates that they receive approximately 500 visitors during their season of operation, which is essentially May to Sept. (they don't necessarily have someone at the site all the time, but that period is when they are active with their banding program).

The time for implementation of a visitor management plan is now, before many more visitors come to the Natural Area. One of the major reasons why it is important to have a visitor management plan now is the tremendous potential this area has to attract considerably more visitors than it currently attracts.

Wildlife viewing, which is a component of ecotourism, is very popular and, currently, very much expressed as a frustrated demand by urban dwellers who have the interest, but not the knowledge about where to go and how to do it. In a 1994 survey of potential ecotourists in North America, general consumers (n=1400) rated wildlife viewing as the second most important of fifteen factors related to ecotourism, and experienced ecotourists (n=424) assigned it the most important rating of all (Ecotourism - Nature/Adventure/Culture: Alberta and British Columbia Market Demand Assessment, HLA Consultants & ARA Consultants, 1995).

In Alberta alone, almost 25% of Albertans over 15 years of age made a trip specifically for the purpose of watching wildlife in 1987. That same year Albertans are estimated to have spent $305.4 million on trips or outings for the purposes of viewing wildlife (HLA Consultants, et al., Marketing Watchable Wildlife Tourism in Alberta, 1990). This is indicative of a potentially large market for the Beaverhill Natural Area that could relatively simply be realized through an awareness campaign.

With the large Edmonton Metropolitan Area so close to the Beaverhill Natural Area, there is considerable potential for substantial increased visitation, particularly if the Natural Area is promoted. The key messages will need be: "learning"; "an incredible opportunity that we will show you how to enjoy"; "good value for dollar"; "a learning experience the whole family can enjoy"; and "a mix of sites and activities (e.g. viewing, hiking, picnicking, learning, interpretive displays, visit farm lands, and purchase themed souvenirs and gifts)". While marketing is not the focus of this report, it is important to note that effective marketing will be very possible, but should be well timed after the essential components of the visitor management plan are in place.

This visitor management strategy is intended to direct visitors to appropriate access, circulation, paths, viewing mounds, and behaviours such that the enjoyment of their experience is optimized and the integrity of the resource is maintained.

2.2 Visitor Destination

2.2.1 Existing Site Conditions

The site as it exists is poorly developed to support public use. The site has undefined on-site parking, one toilet that requires repair within the BBO site, a limited number of benches, and virtually no waste receptacles. In this sense, the site is considered and serves a very limited market.

Current Site Functioning

As a result of the site inspections, review of previous documentation and selected interviews, it was determined that, with some exceptions, the site is functioning satisfactorily with the current low visitation levels. Those exceptions are:

- lack of an orientation map to the site;
- lack of clearly defined parking (i.e. on leased land or in Natural Area) and potential conflict with grazing operation;
- poor access to the site (i.e.impassable seasonal road conditions, access through private and leased land);
- conflict of service road and pedestrian routes;
- pedestrian and vehicle routes that are frequently wet which have led to random (braiding) trails;
- lack of proper support facilities (i.e. toilet facilities, benches, garbage disposal, picnic areas, parking);
- lack of screening around existing viewing sites; and
- lack of defined pathways and no loop trail.

Sensitive Areas

Sensitive areas have been identified (see Figure 2 at the back of the report) and are described as follows:

- existing wooded area southwest of the Natural Area site - possibility that Coopers Hawk nest in this area;
- south edge of Lister Lake (at the southwest corner) - indication of rails in the area;
- a zone around the Beaverhill Bird Observatory - this is described as being sensitive because of the research programs that are being undertaken; and
- areas that are subject to being frequently wet - located at position A along the main trail and at position B adjacent to the weir.

2.2.2. Development Plan

There was mixed feeling about development of the east side of Lister Lake (a relatively large and treed area of land). Most of the stakeholders, when interviewed individually, expressed that it would be good to have some, but more limited development, on the east side, as well as the west side, to relieve some of the pressure on the west side. In addition, the east side is an excellent area to interpret deer and their habitat. This variety would make the total area more attractive.

At the final workshop, in a very brief discussion, it was felt that the focus should now be only on the west side and that the east parcel (east of Lister Lake) be maintained as a largely undeveloped area (except for screening at the mound and parking/access). In the event that there is excessive use of the west portion, the east portion can then be considered for development. It is not clear that this has been well resolved. It is recommended that the stakeholder group raise this issue at a meeting and resolve it through more careful consideration than was possible during the course of this study.

In order to prepare a visitor management plan it was first necessary to identify objectives for physical development, indictors by which the objectives could be evaluated and specific methods of evaluation. This was done on the basis of all the interviews and literature that was reviewed and then, primarily, through the final stakeholder workshop that was held with 15 participants on March 10th, 1995. Very considerable detail, with priorities set on the basis of ratings and rankings, evolved, through a structured objective process, at this workshop. While the ratings and rankings, as well as the indicators and methods of evaluation, are not presented in the text of the report, they form the basis for the development of the recommendations of this visitor management plan. They are presented in very comprehensive detail in Appendix 5 "Objectives, Indicators, Methods of Evaluation" and in Appendix 6 "Ratings: Desired Management Conditions and methods of monitoring".

The key physical plan development objectives identified at the March workshop, in order of priority, are (stakeholder composite ratings for these are presented in Appendix 6):

- avoid and minimize disturbance of key species when location trails;
- maintain existing drainage patterns (during facility construction);
- decrease impact of human waste (visual, smell);
- provide good viewing opportunities while minimizing disturbance factors;
- provide pedestrian access to water (while avoiding sensitive sites);
- provide separate service access from pedestrian access to minimize pedestrian/vehicle conflict;
- provide pedestrian access (trails) to appropriate areas of the site; improve accessibility and decrease random walking;
- * provide rest areas on site; and
- * all weather pedestrian access

  * these two were rated as a very low priority by the stakeholders.

The following is a description of the principal elements of the physical development plan:

Vehicle Access/Parking

West Site: The access to the site is east from Tofield following County Road 626. However, the last 1.6 km. of this roadway is in poor condition and will require upgrading by removing the top 50mm layer, adding 50mm of new gravel, blending with the existing gravel and recompacting it. An access gate will be constructed across the road to close off the area in the off-season, and nightly during the peak season. Parking for 50 cars and a bus turnaround/layby will be provided (see Figures 3 at the end of this section and 4 in the back envelope).

Development within the existing treed area will contain picnic sites, restroom facilities, a quiet passive area and a short walking trail. Adjacent to the parking lot a maintained grassed area will be established for use by children on bus tours. This space will allow the students to run around and use up their 'pent up' energy before they enter the Natural Area. A row of trees will be planted to screen the parking area from the lake. All proposed facilities are above the full supply level of Lister Lake. Pedestrian access to the site will cross the existing ditch, go east on the road right-of-way, and move northeast around the existing dugout. A portion of this is proposed as a boardwalk, as this area can frequently be wet. It is recommended that the existing access road going through the Milo Stauffer grazing lease be closed to eliminate random access and conflicts with the grazing operation. The fence in this area will be required to separate the cattle from pedestrians.

East Site: It is recommended that a 10 car parking lot with a bus turnaround be developed at the SE corner of the quarter section (see Figure 4). Site signage showing a map of the Natural Area, trails, viewpoints, and proper behaviour should be provided. At this point it will be necessary to fence and gate the area to eliminate random access. However, a gate will now be required to access the Pepper Grazing Lease. A control gate will be required at County Road 626 to control access as previously described for the west site. The amount of parking for both sites was determined by the stakeholders during the interviews. Repairs and an extension to the northern boundary fence are required to restrict uncontrolled cattle access.

Service Access

It is recommended that a new 3.5m wide gravel service access be developed on the road right-of-way immediately south of the existing bait station (see Figure 5). It will be possible to follow the existing north route and at the existing tree stand the road will go east to the northwest corner of the existing Natural Area access point. In the cost estimate the road surface is indicated as gravel. However, the gravel can be added later to reduce the initial cost. A texas gate will be installed at this northwest access point. This has been discussed with Wildlife Management and Ducks Unlimited and they have stated that, as long as there is a locked gate on Rowan's route with limited access to only those who need to enter the

area (such as the Stauffers, Fish & Wildlife, Ducks Unlimited and designated representatives of the Beaverhill Bird Observatory), this would be an acceptable service access route. Providing the access in this manner eliminates the conflict that currently exists with vehicles driving parallel to Lister Lake along the pedestrian routes. This time the fence should be extended north to the lake to restrict random vehicle access. It is then possible to maintain the new service alignment such that it will not conflict with the pedestrian use.

Pedestrian Access

West Side: As a result of the workshop, it was suggested that an all weather pedestrian trail not be developed throughout the site. However, some work that have been identified on the opportunities/constraints plan (Figure 2) will be required along the wetlands. Boardwalks will be required between the parking and Natural Area, as well as adjacent to the weir as these areas are frequently wet. A gravel trail is proposed from the parking to the weir (see Figure 4). From the weir the gravel trail would then travel west until it intersects with the western boundary of the Natural Area. At this point, a natural trail will proceed south along the existing road right-of-way, meandering through the existing bush to complete Trail Loop A. There is a further natural trail proposed identified as Trail B south of the Beaverhill Bird Observatory that will provide a shorter loop. These trails provide the opportunity to see woodland birds and create a protected area during windy days.

East Side: There are some undeveloped trails within this site. However, at the present time no development will be considered until there is enough pressure on the west side to require the east side for public use. At that time, it is recommended a bridge be placed on the weir so that visitors can cross into the east side. However, the trails on the east side would be left in a natural condition. As well, a proposed trail on the south side of the lake will also connect the two parcels when the east side is developed. These have been shown on the figures and are indicated as future trail linkages. The trail that leads directly from the parking/restroom area to the viewing mound should be a gravel surface. The mound should be screened similar to the mounds in the west portion of the site.

Viewing Opportunities

There are three major viewing points that were identified for the west portion. The first is identified as Viewing Mound #1. The second is a level area facing east and the third is at the weir. On the east side there is one viewing mound #4 located at the west end of County Road 626 right-of-way. It is recommended that viewing screens be established at all these points except for the second viewing area. The screens could be structural screens constructed similar to those at Francis Viewpoint which consist of log slabs mounted on 4 x 6 stringers at approximately 8'-0" high (see Figure 6 at the end of this report section). They should be open to the south to allow viewing of the bird fly paths. Adjacent to the open water going north from mound #1, it is recommended that willows be planted to

eliminate the visitor silhouettes. North on the same trail, a 10 m (or tree-top level) viewing tower is recommended that will be placed on the edge of the trees. At the end of the pathway, located adjacent to the weir, a 1.5 m high platform is proposed. From this platform it will be possible to see the great expanse of Beaverhill Lake and it will also act as a focal point when using the trail.

Amenities

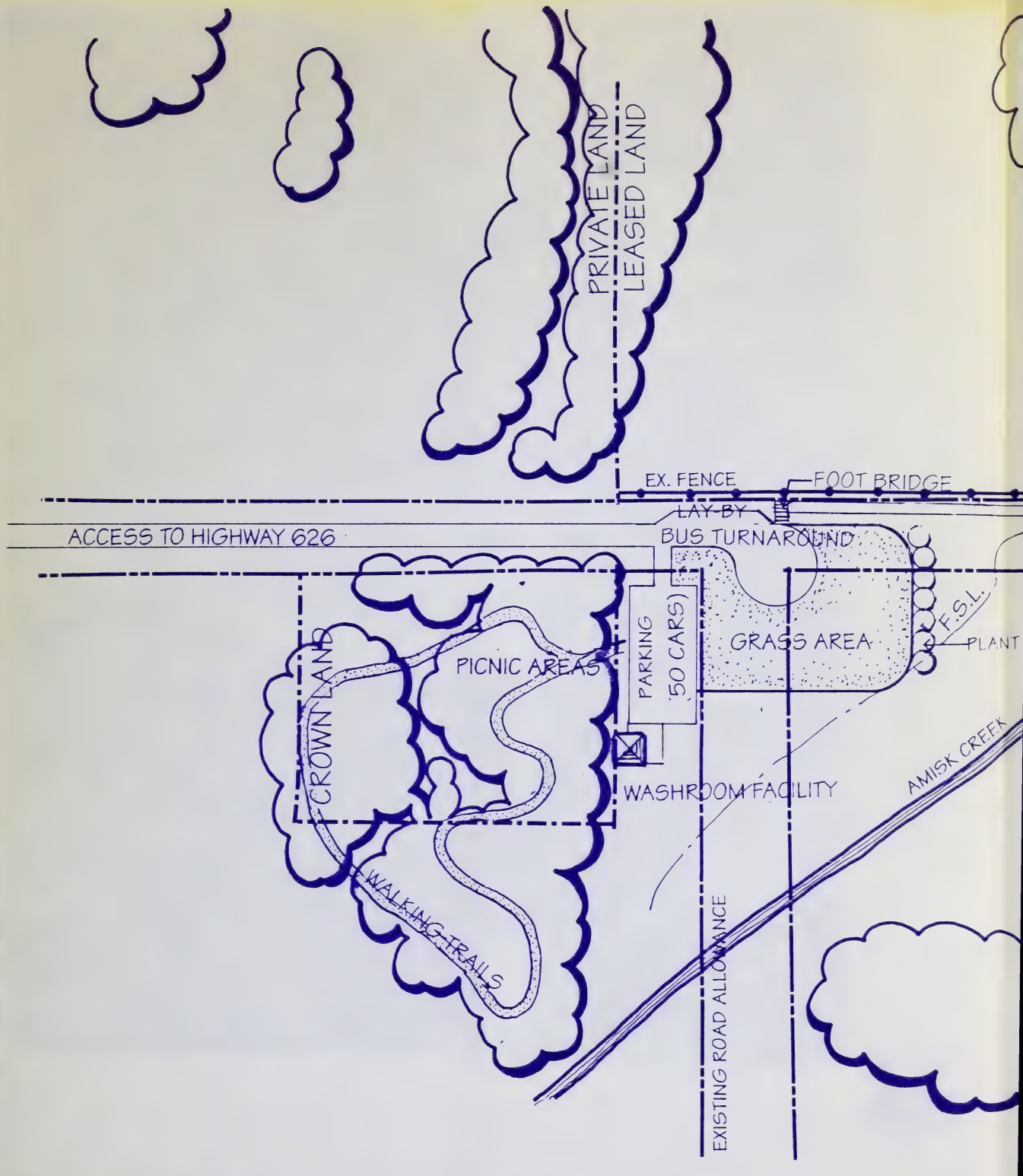
Amenities within the site would include rest nodes consisting of benches, picnic tables, trash receptacles, and toilet facilities strategically located to minimize the impact of human use/waste on the site. These facilities would be located at the parking areas and in the vicinity of the Beaverhill Bird Observatory, but not at the viewing areas. (see Figure 4).

2.2.3. Development Sequence

To implement the plan that has been outlined, we propose the following development sequence. This is the sequence that will be most effective in protecting the resources at the Natural Area.

1. Provide 50 car parking lot with a bus turnaround/layby and toilets, complete with culverts, gravel surfacing, and control gate on Rowan's Route.
2. Construct a pedestrian bridge crossing the ditch, a boardwalk leading to the site from the parking lot, and boardwalk near the weir.
3. Upgrade 1.6 kms. of Rowan's Route.
4. Provide a guide program, highway signage, interpretive signage, orientation signage and instructions for the proper use of the site.
5. Provide two loop trails; one identified as Trail B south of the Beaverhill Bird Observatory and the second (Trail A) as a south trail in existing road right-of-way.
6. Construct raised trail sections and 2.0m wide gravel trails.
7. Construct 10m viewing tower and 1.5m viewing platform.
8. Develop formalized viewing areas, rest nodes and provision of on-site infrastructure such as toilets, benches, trash receptacles, etc.
9. Upgrade a new service access from the west.
10. Extend fence on north side of west parcel.
11. Develop picnic sites in the wooded area immediately adjacent to the parking lot.
12. Repair and extend fence on north side of east parcel.
13. in the short term, limit development on the east parcel of land with the exception of access, control gate, small parking lot, bus turnaround and gate/fencing of the area (access required to Pepper grazing lease). However, use and development of this area needs to be resolved by the stakeholders.

The cost of site development, as described, is estimated to be $687,757.00, which includes a 15% design contingency. Details of the costs are presented in Appendix 7 "Opinion of Probable Cost".



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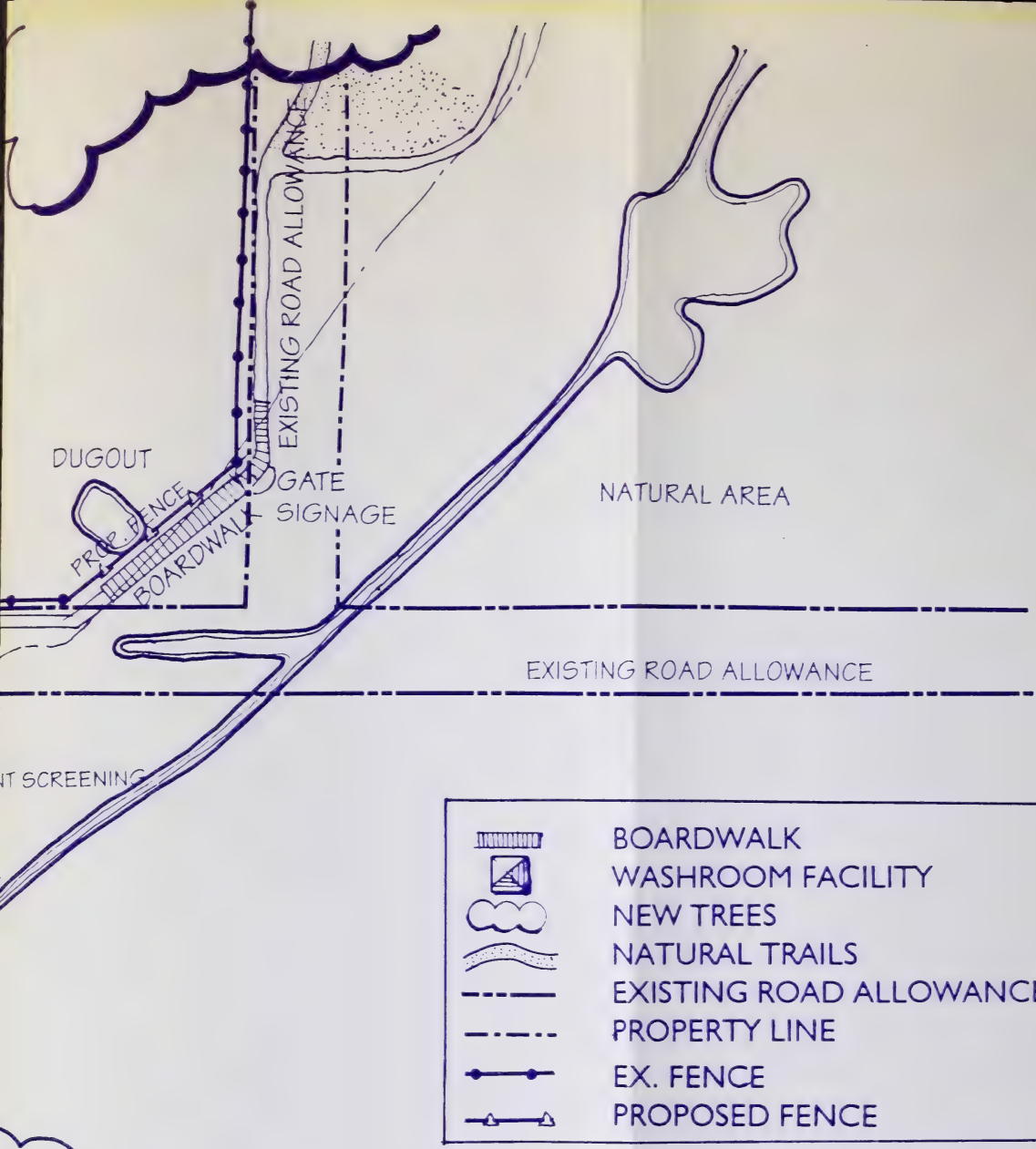

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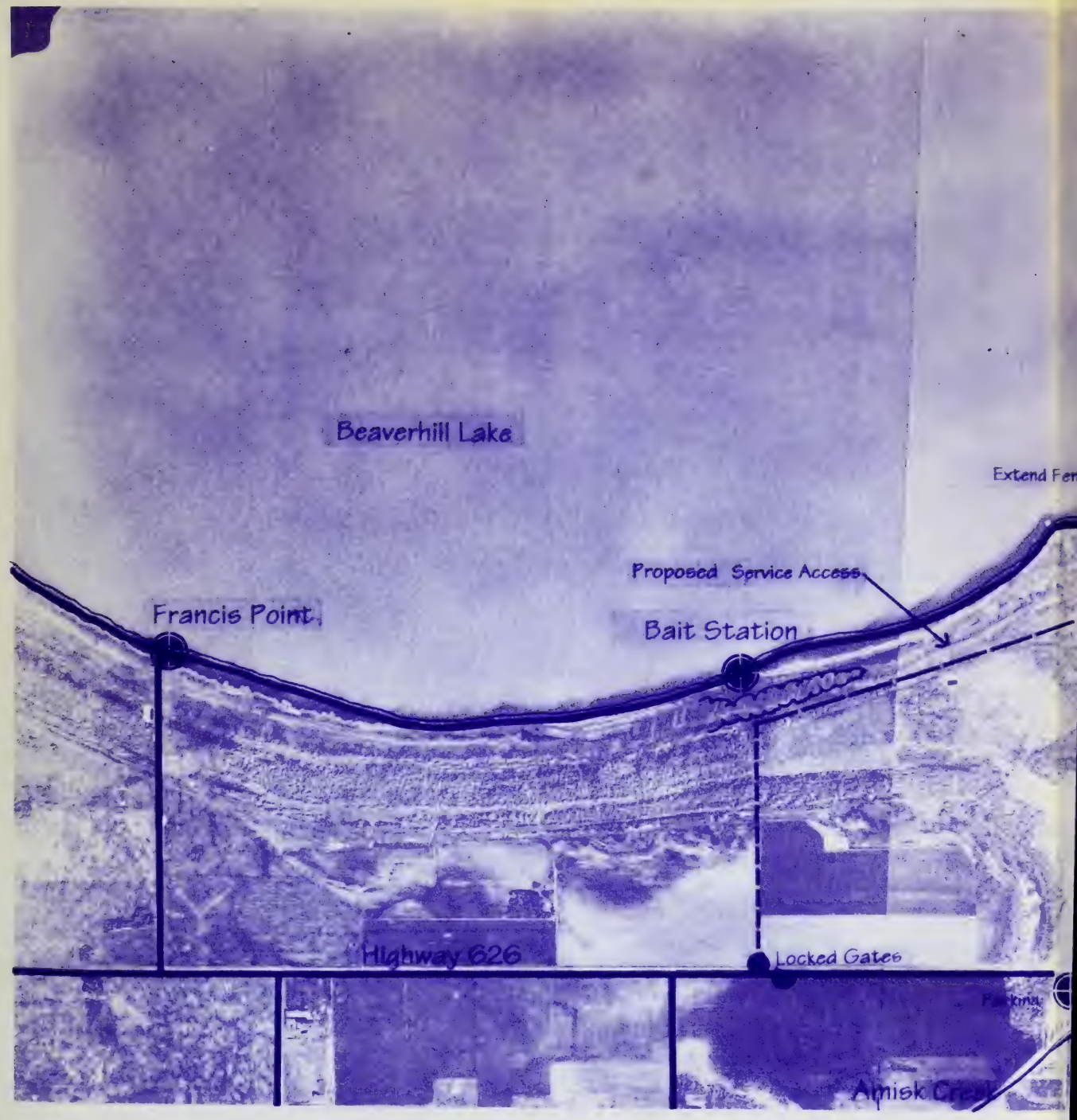
WEST AREA PARKING & ACCESS

FIGURE 3



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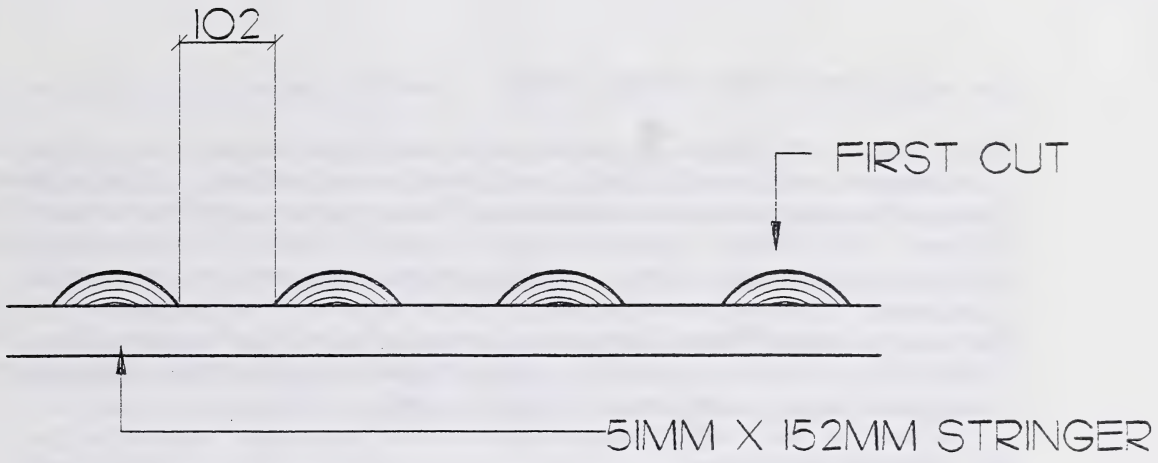
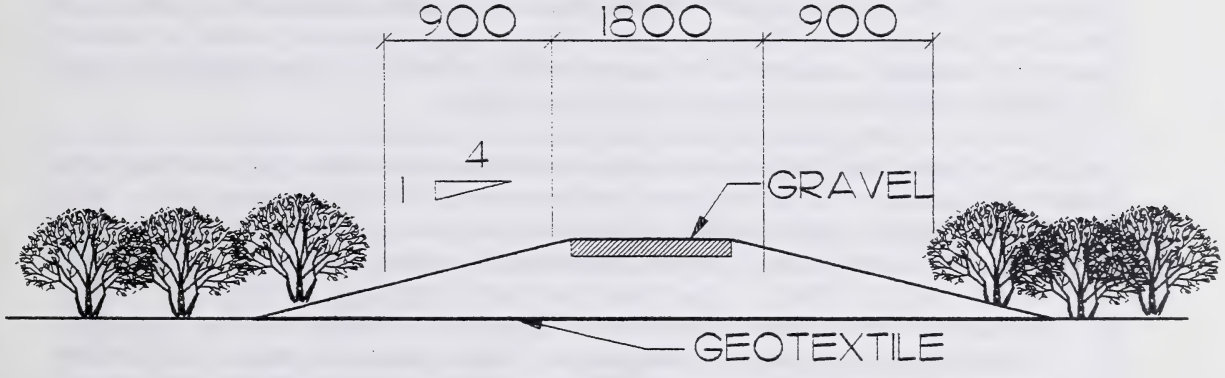
SERVICE ACCESS

FIGURE 5



VIEWING SCREEN (2400MM HIGH)
PLAN



TRAIL SECTION - WET AREAS

3.0 MANAGING THE NATURAL AREA

This chapter deals with management of the Beaverhill Natural Area. All aspects of management are addressed, including; biophysical, social conditions, visitor experiences and very specific management recommendations. These were developed from the literature we reviewed, from the many interviews held and from the results of the two workshops held with the stakeholder group. Prior to arriving at these management strategies, key issues and management objectives were developed. From the key issues, desired operational objectives (statements of desired conditions) were derived along with indicators of these desired conditions and methods of measuring them. This latter documentation, that supports the management strategies can be found in the appendices 5 & 6.

3.1 Biophysical Elements

3.1.1 Maintaining Desired Biophysical Conditions

Presently, visitor impacts associated with habitat disturbance and loss are small and generally not considered significant. Some habitat loss has occurred due to trail development, but this is minimal. More important are impacts associated with wildlife disturbance due to numbers and kinds of users. Members of the Beaverhill Bird Observatory (BBO) have observed, for example, that once birds are viewed from the weir they move off and are not as easily seen by subsequent birders. Viewing from the weir is best in the early morning before feeding and loafing birds have been disturbed. Unleashed dogs are also disruptive to wildlife, particularly nesting waterfowl, deer, and other mammals such as coyote, fox, hare, rabbits, and weasel.

Because use of the area is presently low and primarily by committed birders, naturalists, and researchers, impacts to date have been small. Future concerns, however, centre on increased numbers of users and associated disturbance of wildlife, as well as wildlife habitat damage and loss. Both of which result in decreased wildlife abundance.

Desired biophysical conditions for the study area are those associated with protecting native species and habitats, while developing public appreciation and respect for the area's biological resources. Four specific objectives were developed that reflect the desired biophysical conditions for the study area, including the following:

1. to maintain and enhance the nature and quality of existing study area habitats;
2. to maintain and enhance the study area's wildlife productivity and natural diversity;
3. to minimize human impact on wildlife productivity and natural diversity; and
4. to develop public appreciation and support for the protection and conservation of the area's natural resources.

The above are further detailed as follows:

- maintain or enhance the nature and quality of study area habitats;
- maintain and improve the capability of study area habitats to support waterfowl;
- conduct regular monitoring to document changes in waterfowl use and response to disturbance;
- maintain and improve the capability of study area habitats to support birds other than waterfowl;
- conduct regular monitoring to document changes in bird use and response to disturbance (birds other than waterfowl);
- maintain and improve the capability of study area habitats to support deer:
- conduct regular monitoring to document changes in deer use and response to disturbance;
- maintain and improve the capability of study area habitats to amphibians and reptiles; and
- encourage public appreciation and respect for the study area's biological resources;

Indicators, units of measure, and methods of evaluation were identified for each objective in order to clarify the processes associated with meeting the biophysical objectives and for quantifying change. This was undertaken for habitat, wildlife and educational considerations. The results are presented in appendix and were developed in conjunction with the Project Steering Committee and Beaverhill Lake Stakeholders. Appendix 6 also details specific management strategies by major objective.

Methods of evaluation are discussed below as they pertain to the biophysical objectives and associated habitat, wildlife and educational considerations.

Habitat Considerations

In order to maintain and enhance the nature and quality of existing study area habitats, an ecological inventory of study area conditions is required. Preparation of an ecological base map is recommended that takes into consideration the inter-relationships among environmental factors. The resulting map would consist of ecologically-integrated units characterized by recurring patterns of vegetation, topography, soils, and drainage conditions. A scale of 1:2,500 is suggested so that the base map is of sufficient detail to allow for meaningful resource assessments and to facilitate comprehensive planning and monitoring. The inventory should be accompanied by a program to monitor changes in the extent and distribution of study area habitats (for example, changes in the distribution and extent of mudflats and emergent aquatic vegetation). A five-year monitoring interval is suggested.

Wildlife Considerations

Wildlife objectives include maintaining and enhancing the study area's wildlife productivity and natural diversity, as well as minimizing human impacts to wildlife. These objectives

were examined for four wildlife groups based on their occurrence in the area and general interest. These groups included waterfowl; birds other than waterfowl, notably: shorebirds, marsh birds and forest birds; ungulates; and amphibians and reptiles. Other wildlife groups could be considered in the future based on interest or concern and the approach described below used to develop methods of evaluation.

Methods of evaluation for waterfowl and other birds included five principal components as follows:

1. review of existing records, primarily BBO and Ducks Unlimited records to determine commonly seen migrants, nesting birds and rarely recorded species in the general area;
2. identification and mapping of seasonally important habitats using the ecological base map recommended above;
3. counts of numbers of staging and breeding birds; and
4. recording to determine changes in bird numbers and seasonal use of habitats; and
5. recording bird response to disturbance.

Methods of evaluation for deer were similar and included the review of Fish and Wildlife records pertaining to deer use, identification and mapping of seasonally preferred and less regularly used areas, determination of browse abundance and use, and observation of changes in use and deer response to disturbance. Evaluation methods for amphibians and reptiles include annual estimates of relative abundance at known preferred sites and identification and mapping of seasonally important areas.

Educational Considerations

The primary educational goal is to encourage public appreciation and respect for the study area's biological resources and in so doing develop a greater understanding of the ecological relationships that characterize the area and appropriate site use. Indicators and methods of evaluation would include visitor participation in educational programs, visitor feedback, and visitor restraint regarding disturbance of wildlife.

3.1.2 Biophysical Management

Management of the study area's biophysical resources requires both an inventory of study area habitats and conditions, and inventory of wildlife use. The inventory should be accompanied by monitoring programs to document changes in study area habitats and conditions, changes in wildlife use, and wildlife response to disturbance. The inventory and monitoring programs should be coupled with educational programs that encourage appreciation and respect for the area's biophysical resources and a visitor code of ethics regarding wildlife viewing. Management needs are discussed as they pertain to the various

habitat, wildlife and educational considerations. This is presented in more detail in appendix 6.

Habitat Considerations

An inventory of the nature and quality of study area habitats is required to facilitate comprehensive planning and monitoring of the area's biophysical resources. An ecological inventory that takes into consideration the inter-relationships among environmental factors including vegetation, topography, soils, and drainage conditions should be undertaken. This would involve the preparation of an ecological base map documenting the distribution and extent of: poplar forest; willow shrublands; shoreline areas of grass, sedge and rush; emergent aquatic vegetation including bulrush and cattail; mudflats; and open water. The field inventory and preparation of the ecological base map has the highest priority. Alberta Park Management Support should be approached to fund the inventory. Costs are estimated at $15,000 and include 20 days of professional time.

This inventory should be accompanied by a follow-up program to map changes in the distribution and extent of study area habitats. This information is needed to help assess changes in wildlife use that are potentially habitat related. Ideally, monitoring should be undertaken every five years. Monitoring is as important as the ecological inventory of baseline conditions. Responsibility for monitoring changes in study area habitats could be a joint responsibility between the Park Management Support, A.F.R.D., Wildlife Management, the BBO, and the Nature Centre. Costs are estimated at approximately $7,500 and include 10 days of professional time.

Management of the area may include allowing study area habitats in the area to evolve naturally or intervention to control the growth of senescent willow and the spread of poplar. This decision rests with Wildlife Management. It is best supported using the information collected during the ecological inventory and ongoing monitoring of study area habitats.

Wildlife Considerations

An inventory of wildlife use of the study area, coupled with a monitoring program to document changes in use, is needed to determine if changes in wildlife use occur and whether the changes are habitat related.

1. Waterfowl

In regards to waterfowl, most important is a review of existing BBO records to determine commonly seen migrants, nesting birds and rarely recorded species in the general area. This responsibility could be assumed by the Nature Centre and should be undertaken as part of the inventory of current waterfowl use. Costs are estimated at approximately $1,000 and include 3 days of professional time.

Equally important is a program of field work to identify and map seasonally important areas for staging, nesting, feeding, loafing, and moulting waterfowl. This work should be coupled with counts of numbers of staging birds on Lister Lake during spring and fall migration. Costs are estimated at approximately $3,000 and include 20 days of professional time. This work should be undertaken prior to implementing the visitor-use plan and every year thereafter. Responsibility for this work could be entrusted to the Nature Centre, with help from the BBO who have expressed a willingness to survey the west shore of Lister Lake.

Management could also include the collection and monitoring of data on number of breeding pairs, nest success and brood size. This work is labour intensive. Breeding pair counts are estimated to require 18 days of professional time and to cost approximately $3,500. Estimates of nest success are even more time consuming and costly requiring approximately 24 days of time and costing $6,000. Work to estimate brood size is estimated at $4,500 and includes 20 days of professional time. Wildlife Management may be interested in assuming the responsibility for this component of the waterfowl inventory, potentially with help from volunteers. This work is of secondary priority to that associated with identifying and mapping the use of seasonally important habitats.

Management of the area may also include breaking up extensive stands of emergent aquatic cover. This decision rests with Wildlife Management and can be supported using the information collected on the distribution and extent of emergent vegetation.

Visible response of waterfowl to visitor use is a top priority. Panic, flight and escape behaviour should be monitored during periods of low and high use (i.e., weekdays versus weekends) using an established set of criteria. Criteria could include no visible response, flushed at 100m, 50m, and 20metres. Nature Centre volunteers and potentially BBO personnel may be interested in this responsibility. Costs to do so should be minimal if volunteer staff are used.

2. Other Birds

Management objectives for other birds, including shorebirds, marsh birds and forest birds, are similar to those for waterfowl and include as a top priority a review of existing BBO records to determine commonly seen migrants, nesting birds and rarely recorded species using the area. This responsibility could be assumed by the Nature Centre and should be undertaken as part of the inventory of current use by birds other than waterfowl. Costs are estimated at approximately $1,000 and include 3 days of professional time.

Equally important is a program of field work to identify and map seasonally important areas for migrating and breeding birds using the ecological mapping as a base. This work should be coupled with counts of bird use in the vicinity of the weir including shorebirds use of mudflats, pelicans use of loafing bars, and rails heard calling near the weir. The BBO has expressed an interest in assisting with bird counts in the vicinity of the weir. Mapping of seasonally important areas could be the responsibility of the Nature Centre. Costs are estimated at $1,500 and include 10 days of professional time.

Use of hawk and owl nest sites should also be determined including presence, absence, and number of young successfully fledged. This responsibility could be assumed by the Nature Centre, interested volunteers, and potentially BBO staff. Seven days of time are estimated as needed for hawks and potentially as many as nine days for owls. If both programs were conducted concurrently, costs should not exceed $2,000.

Visible response of birds to visitor use is a high priority. Panic, flight and escape behaviour should be monitored during periods of low and high use (i.e., weekdays versus weekends) using an established set of criteria. Criteria could include no visible response, flushed at 100m, 50m, 20 metres. Nature Centre volunteers and potentially BBO personnel may be interested in this responsibility. Costs to do so should be minimal if volunteer staff are used.

3. Deer

Deer management would involve an inventory of current use including a review of Wildlife Management records and identification and mapping of preferred and less regularly used areas. This is of top priority and could be undertaken by Wildlife Management. A secondary priority would be a field program to collect baseline data on browse abundance and use. This work could also be completed by Wildlife Management or equally by the Nature Centre through interested volunteers. Approximately seven days of time would be needed during the spring before leaf flush. Costs should be less than $2,000.

Deer response to visitor use is also a high priority and should be monitored during periods of low and high use (i.e., weekdays versus weekends) using an established set of criteria. Criteria could include no visible response, flushed at 100m, 50m, and 20 metres. Nature Centre volunteers and potentially BBO personnel may be interested in this responsibility. Costs to do so should be minimal if volunteer staff are used.

Management of the area may also include clearing of small areas of forest to improve browse production and the quality of winter deer habitat. This decision resides with Wildlife Management and can be supported using the information collected on browse abundance and use.

4. Amphibians and Reptiles

This wildlife group is frequently overlooked, but often useful as an indicator of change in wetland habitats. Management should include annual estimates of relative abundance of amphibians at known preferred sites based on number of egg masses, number of larvae or number of breeding adults. The first two indicators are the easiest to collect and could be undertaken by Nature Centre volunteers. Costs to do so would be minimal. An inventory of relative use should be accompanied by mapping of seasonally important areas. At the very least, management should include maintenance of preferred habitats and provision of additional hiding cover, such as logs and rocks.

Both the University of Calgary and Wildlife Management are interested in any amphibian and reptile data collected and would be willing to help establish sampling protocols in exchange for data.

5. Educational Considerations

A mix of educational programs are needed to develop public appreciation and respect for the study area's biological resources including a program devoted to the significant natural features of the area, the ecological relationships that characterize the area, and a visitor code of ethics. These programs are all equally important and could be developed through the Nature Centre with input from the Beaverhill Lake Stakeholders including the BBO and Wildlife Management (see Beaverhill Interpretive Plan, 1994).

3.2 Social and Structural Considerations

3.2.1 Maintaining Desired Social Conditions

The social conditions refer to the social impacts visitors to the Beaverhill Lake Natural Area have on the adjacent rural communities and on the Town of Tofield. In the interviews that were conducted, it was expressed that the social impacts, positive or negative, on the Town itself were minimal since there really are very few visitors that currently come to the south shore of the Lake for wildlife viewing.

In discussions with the adjacent landowners the same opinion was reflected, relative to current conditions. They even expressed that, although there are some annoying minor incidents at times, in some ways it was desirable to have the level and character of visitor that is there currently. They are considerate and generally well behaved and can be quite interesting to talk to. The land owners indicated that most of the visitors currently are relatively avid birders and they have a strong interest in the resource and in proper behaviours. The landowners currently do things to facilitate the experience for visitors and management of the area.

The landowners expressed very strong pride in the existence of the spectacular birding opportunities in their neighbourhood. Along with that pride, they are interested in "showing off" the area and they enjoy it. We can conclude that, under the current situation, landowners are impacted positively from the area and its visitors. However, they do caution that it is critical for the numbers and behaviour of the visitors to be such that they do not degrade the resource or interfere with their farming operations.

As expressed by the landowners, the desired social conditions, in random order, are:

1. an all weather road access to the Natural Area, but not highway standard or paved;
2. safety on the route between the Natural Area and Town;
3. a litter free environment along the road and at the Natural Area;
4. no disruption in farming activities, nor at the farm residences; and

At the final workshop, participating stakeholders were asked to rate the importance of each of these social conditions (objectives). The results can be found in Appendix 6. The most important ratings reflect minimized disruption to the multiple land users of the resources at the Natural Area and in the general region. However, it is significant that all were rated relatively highly, indicating that these are all important desired social conditions.

From the review of the background literature and the interviews with the many stakeholders, indicators of the desired social conditions were developed. These are presented in appendix 5. From the indicators, units of measurement were developed. This is essentially a monitoring plan for the desired conditions. These are also presented in appendix 5, for each of the desired conditions identified above.

From the priorities set by the stakeholder group, it is clear that the very strong preference for monitoring all social conditions is to directly approach the landowners and ask them specific questions. In the case of minimizing conflict between the multiple users of the resource, it will also be important to question the BBO as well as the farmers. Second in importance is to record complaints and to do visual observation of conditions.

3.2.2 Maintaining the Desired Visitor Experiences

One of the two principal management objectives identified for the Natural Area is to optimize visitor satisfaction. Within the context of maintaining the integrity of the resource, it is essential that visitors enjoy their experiences at the Natural Area. In the interviews it was expressed that the few visitors to the area are principally the more avid birders and that they set their own rewards with the experience. It was also indicated that, with the current lack of infrastructure at the Natural Area and with the lack of visitor management and interpretation, that the visitor experience, particularly for the novice birder, was not as good as it should be.

The individual interviews with the stakeholders clearly specified that it is important to interpret the multi-use aspect of the Natural Area and of the adjacent lands. This referred specifically to extending the interpretation to all wildlife (defined to include all flora and fauna), to the involvement of the BBO and Ducks Unlimited Canada, and to the adjacent farm uses of the land. This also included the idea of extending the interpretation of wildlife to areas on patented land away from the Lake and Natural Area. Landowners indicated that there are many birds that nest on and visit their hay meadows and sloughs, that the water at times could be retained to have more birds, and that they might be willing to do this. It would further serve to reduce some of the pressure by spreading the visitors around the area rather than having a concentration at the Natural Area. The concept of spreading the use to the east side of Lister Lake was often identified in the interviews.

This concept of multi-use interpretation has the potential for economic opportunities (i.e. farm interpretive tours). In addition, it will provide the visitor with the opportunity for a broader, and thus considerably more satisfying experience.

In the stakeholder interviews the desired visitor experience objectives were expressed as follows (presented in order of importance as ranked by the stakeholder group - see appendix 6):

1. minimize pressure on area, yet encourage visitation and maintain visitor satisfaction;
2. provide an educational/interpretive experience for visitors;
3. practice appropriate visitor behaviour and ethics;
4. visitor satisfaction;
5. communicate with effective non-obtrusive signage and brochures;
6. optimize economic opportunities; and
7. broaden season of use.

The most important, as per the rankings, are to do the things necessary, but with education and interpretation, to optimize visitor satisfaction within the context of maintaining the integrity of the resource. Broaden the season of use and optimization of economic opportunities were

rated very low. As one landowner said, " retain it as a jewel, don't treat it as an economic gold mine".

In Appendix 5, for each of the desired conditions, indicators are presented, along with the methods of evaluation for the conditions.

The ratings (presented in Appendix 6) indicate the following monitoring activities as being most important:

- record visitors at Natural Area and at all locations, including private landowner sites, and times of visit;
- record numbers of landowners who "groom" sites on their lands for viewing;
- record visitor comments and school group use;
- do random visitor surveys;
- record sales of interpretive materials;
- record visitor complaints;
- observe visitor activities;
- guides record observations and comments; and
- observe signage confusion;

Maintaining the desired visitor experiences, while at the same time protecting the integrity of the resource can be facilitated through having visitors learn about and understand the process and concept of this visitor management plan. An interpretive display and brochure should be prepared that focuses on the visitor management plan and its process. This will serve to enhance the significance of the Natural Area in the minds of the visitor and further, through this increased awareness, serve to encourage appropriate behaviour at the site.

3.3 Implementation Strategy

Although the whole of the visitor management plan, as described in the entirety of this report, is, in a sense, an implementation strategy, this section of Chapter 3 focuses on some of the more critical, organizational elements of implementation.

3.3.1 Visitor Direction

The following are recommendations that relate to visitor behaviours when coming to and visiting the natural area. Many are interrelated:

- to begin, all highway signage should direct visitors to the Nature Centre and not to the Natural Area, Francis Point or other viewing areas on the Lake. The Nature Centre must assume the principal role in informing and directing visitors. A visitor experience begins at the Nature Centre where they can do the following:
  - receive some interpretation from the interpretive exhibits on display;
  - discuss the resource with an informed person;
  - learn proper behaviour;
  - purchase souvenirs and interpretive materials;
  - rent binoculars and an area viewing kit;
  - hire a guide - learn about offered tours;
  - be directed to sites other than the Natural Area in the region;
  - learn of the services they can purchase in the community; and
  - be encouraged to participate in research.

It is expected that the centre will have the key role in ensuring that visitors are well informed of the proper code of behaviour when at the site. This will also enable the Centre to monitor and measure use of the area and control use at the Natural Area if at any one time the number of visitors appears to be too many. It will also enable an opportunity for the visitors to learn of services in the community. In this manner local economic benefits can be realized.

- at the end of the visit all visitors should be encouraged to stop by the centre. This will permit the Centre to do the following:
  - survey (informally or formally) the visitors to measure visitor satisfaction;
  - know how many visitors are left in the region;
  - provide another opportunity to sell more souvenirs;
  - provide another opportunity to direct them to community services; and
  - emphasize the central role of the Centre so that when they return it will be through the Centre.

Visitors can be encouraged to return to the Centre by requiring them to return rented equipment (e.g. binoculars), through simply being asked to, or through being required to return something borrowed (e.g. a self directed viewing guide or kit that would be rented or simply lent at no charge). In addition, if a guided tour was used then visitors would automatically return

to the Centre.

- all visitors should be encouraged to visit the Natural Area accompanied by a guide for which they would pay a fee. This will be effective in promoting proper behaviour that will protect the resource. It will also make the experience more enjoyable and a better educational experience since the guide will be an informed interpreter. Additionally, by charging for this service, it will generate revenues. The Centre should promote and sell guided tours as much as possible.

- visitors should be encouraged to participate in research. For example, they can through a simple checklist assist with monitoring sighting of bird species, their frequency and their location. This can be a very educational exercise and makes the whole experience more enjoyable.

- inexperienced visitors must be made aware at the Nature Centre that they have something to learn, prior to visiting the Natural Area. First time visitors will require more assistance than others to get the most out of the experience. The Nature Centre can play a key role in assisting these inexperienced visitors.

- through signage (positive not negative) and through brochures and other literature, appropriate behaviour will be promoted when at the Natural Area and also at other areas in the region. In particular, it is expected that the following behaviour and viewing ethics will be taught:
  - no feeding or harassment of wildlife;
  - respect for buffers around sensitive sites;
  - visitors are encouraged to be patient when viewing wildlife and to maintain a respectful distance at all times, particularly in regard to nesting birds;
  - when approaching wildlife, visitors should do so slowly and quietly with no sudden and unnecessary movements; and
  - pack out the garbage you pack in or leave it only in designated receptacles.

- visitors should be permitted onto the Natural Area on foot only; no bicycles and no motorized means of any kind allowed (except for disabled transportation).

- no dogs should be allowed, either loose or on a leash.

- visitors must be encouraged to stay on the roads and the trails and to respect all of the multiple resource uses in the region. In particular, to avoid conflicts it is important that they not go off the roads or designated routes, either by vehicle or on foot.

3.3.2 How is the Natural Area to be Managed

Given the very strong feeling by all stakeholders that it is absolutely critical that the resources of the Natural Area be maintained, at least at its current condition, it is very important that the Natural Area be managed with that objective in mind.

Under the current situation, the mandate for the management of the Natural Area rests with A.F.R.D. with input from Alberta Environmental Protection, Wildlife Management Division and Park Management Support. Since these parties are more removed from the site and its actual utilization, more immediate concerns of site care and visitor management rest with the BBO, the Town of Tofield, County of Beaver, Ducks Unlimited Canada, and to some extent (particularly as relates to access) the adjacent landowners. This unofficial arrangement is not currently optimum; especially looking to the future with the possibility of increased visitation and the implementation of a visitor management plan that will require monitoring.

It is recommended that a "custodian" role needs to be clearly assigned to the parties that are more directly involved with the "day to day" caretaking concerns of the Natural Area and with responsibility for development and maintenance of the tourism infrastructure. The key parties who should assume this role are the Town of Tofield, the County of Beaver, the BBO and Ducks Unlimited. They would then have ultimate responsibility for visitor management and monitoring and also for maintenance of social conditions. These operations would be delivered through the Nature Centre. A.F.R.D. has indicated their willingness to negotiate such an arrangement and have also indicated that this could be done through dispositions. Responsibility for management of the biophysical resource and wildlife productivity would remain as it currently is.

While this is recommended, it is also considered important that all of the stakeholders continue to play a major role through the meetings of the stakeholder committee and that none feel they no longer have a responsibility because there would then be a designated custodian.

The stakeholder committee should address this very specifically at their next meeting. The parties who are recommended for the roles should then meet and negotiate the preferred arrangements. Negotiations should then proceed immediately with Public Lands to have this in place as soon as possible.

Management of the study area's biophysical resources requires both an inventory of study area habitats and conditions, and an inventory of wildlife use. The inventory should be accompanied by monitoring programs to document changes in study area habitats and conditions, changes in wildlife use, and wildlife response to disturbance. The inventory and monitoring programs should be coupled with educational programs that encourage appreciation and respect for the areas' biophysical resources and a visitor code of ethics regarding wildlife viewing.

Responsibility for management of the biophysical resource and wildlife productivity should continue to rest with Wildlife Management, but should only be undertaken with full discussion, cooperation, and agreement of the other stakeholders. The "custodians" may then have major responsibility for implementing some of the specific management practices.

The Nature Centre must play a pivotal role in visitor management. All signage must focus the visitors to begin and end their trips at the Nature Centre. This will facilitate behaviour management, monitoring of activity, encouraging the use of guides, and optimizing the economic opportunities.

The use of guides is very important to enhance visitor satisfaction and especially to help maintain the integrity of the resource, as well as to monitor activities. It is recommended that program funds be obtained in order to have at least one guide available at all times during the spring, fall, and summer. The guide(s) should be senior university students with training in a discipline that will facilitate their roles as interpreters of the resource. There must be a charge for this service, such that it operates, at least, at a cost recovery level.

It has been suggested that the guides should be a shared function between the Nature Centre and the BBO. This will enable better training of guides for an interpretive role. It is recommended that this possibility be explored between the Nature Centre and the BBO.

The interpretive and viewing experience focus must be on more than the Natural Area. It is important to disperse use and interpretation to not put undue pressure on the Natural Area. To achieve this, Francis Viewpoint must continue to be emphasized, along with other areas around the Lake (other sites are discussed in the Beaverhill Lake Interpretive Plan). In addition, landowners must be encouraged to develop viewing sites on their lands, where possible, and to have those open for viewing.

Multi-use interpretation makes it essential that the landowners be continuously involved. As mentioned, they have pride in this resource and want continued involvement. While liability is always an issue, the stakeholder group, in particular the custodians mentioned above, must continue to protect the landowners with respect to liability.

3.3.3 How is The Management Process Begun

In order to begin the management process, the stakeholders need to set up a meeting to review future actions. This would be required to prepare an action plan which includes confirming and modifying the roles and responsibilities that are presented in this report (Section 3.3.1). This should also include drafting up an activity time frame. The time frame should identify required funding associated with various tasks and times and the sources of these funds, as possible. At the same initial meeting, the steps necessary to set up the "custodian" position for the Natural Area should be initiated.

We have prepared an overall matrix for site evaluation which can be applied to this site or any other site in the province. This is an important first step in any site analysis/planning to ensure that the scope and compatible uses are identified prior to discussion proposed or modifications of existing uses. As a planning tool stakeholders may wish to consider using, we present this General Land Use Compatibility Matrix in Appendix 8.

The following are the land planning disposition requirements necessary to begin the management process:

1. Parking Lots: These are located on the road right-of-way of County Road 626 and permission will be required from the County of Beaver to construct on these right-of-ways. In the case of the west parking lot, a portion of this will be on the Kallal Grazing Lease and modifications to the lease will be required.
2. Pedestrian Access: Access will be from the west parking lot to the Natural Area site which would cross the Stauffer Grazing Lease and modification to the lease will be required.
3. Service Access: Access is on a road right-of-way and permission will be required from the County of Beaver. As well, this access crosses the Stauffer Grazing Lease and modification to this lease will be required.
4. North/South Pedestrian Trail: The trail just outside the west edge of the Natural Area is on the road right-of-way and permission will be required by the County of Beaver.
5. Infrastructure and Facility Development Within the Site: This will require the approval of the A.F.R.D. A requirement of approval with governing agencies is that a responsible group must be identified and the necessary agreements entered into for the responsibility for these facilities. This includes construction, maintenance, operations and liability.

3.3.4 On Going Social Condition Management

The social conditions that require to be managed are those that relate to the landowners adjacent to and in close proximity to the Beaverhill Natural Area. It is not anticipated that there will be any appreciable social condition impacts in the Town of Tofield. However, the landowners certainly have the potential of being significantly impacted.

The management of social conditions would be coordinated by the Nature Centre. It would consist primarily of a structured survey of the landowners done twice a season after the spring and fall bird migrations. The survey would be coordinated by the Nature Centre and administered by the guides. This activity would be included in the guide's job description. The collected information would then need to be compiled and stored for time series information. At the same time, landowners would be encouraged to provide unsolicited comments at any time during the year.

3.3.5 On Going Visitor Experience Management

Management of the visitor experience is the responsibility of the custodians, with the Nature Centre having the central role. As previously mentioned, the BBO, particularly if there is a training and sharing of guides, may also play a significant role. This will have to be reviewed and agreed to at the initial strategy meeting. It will be important that this function be co-ordinated and that different agencies not function at cross-purposes, especially given that visitor satisfaction was identified by the stakeholder group as one of the two principal site objectives.

The guide(s) will have the responsibility to project the proper image and will be what the majority of visitors will judge their experience by. Guide led hikes should be encouraged. At the same time, the guide should monitor usage of the site by unguided visitors and should enforce the guidelines set up for the area. The guide should have interpretation as a primary function, express a positive attitude, and make visitors feel good about their experience.

Other duties would include: random surveys of visitors; and observing time spent at the site and specific areas visited. Visitor comments will also need to be recorded. A visitor record/comment book should be located at the Nature Centre and encouraged as a last stop and function for the visitor. Since these functions would be part of the guide's job description, no added funds would be needed.

3.3.6 On Going Biophysical Management

Responsibility for biophysical management will need to be reviewed and decided by the stakeholders on an on-going basis. Many of the stakeholders will have a role to play with various aspects of biophysical management. Biophysical management will require monitoring. Ideally, monitoring should be undertaken every five years through an ecological inventory that takes into consideration the inter-relationships among environmental factors including vegetation, topography, soils, and drainage conditions. Also important is a program of field work to identify and map seasonally important areas for migrating and breeding birds using the ecological mapping as a base.

In addition to birds, other wildlife requires monitoring. This includes mammals, in particular deer, since the east side of Lister Lake is recognized as prime deer habitat. Management should also include annual estimates of relative abundance of amphibians at known preferred sites based on number of egg masses, number of larvae or number of breeding adults.

3.3.7 Signs and Literature

Signage is important in order to lessen the confusion at the Natural Area and to promote proper visitor activities and behaviours. Signs should be clear in depicting where the visitor is, where they are headed, and how long it will take to get there. Signs should be un-obtrusive, yet easily seen. They should be attractive and invite the visitors to read them. They should be informative and interpretive and there should only be a minimum number to be effective. Some signage

should be directed specifically at children. Signage should encourage appropriate behaviour through positive messages and should not be negative.

There are several options when considering sign materials. "High end" signs can be made of porcelain enamel baked on steel plate. This process can use four-color photographs and drawings. The material is extremely tough and signs can last for many years. They are especially resistant to spray paint. Less costly, and shorter lived sign materials include silk screen on plywood or plastic coated board. The signs look good and are weather resistant, but cannot withstand constant exposure to the elements. They have very low resistance to vandals, but are cheaper to replace. Watchable Wildlife (Alberta Environmental Protection) has produced 121 signs interpreting wildlife and plants of Alberta. A review should be done to see if any of these apply to the Natural Area.

In addition, there should be good self-guided interpretive materials developed and made available (for sale) at the Nature Centre. Viewing kits should also be available for rent and sale.

3.3.8 Local Economic Benefits

There should be thought given to creative ways of obtaining economic benefits for the nearby area including the Town of Tofield. At the same time, economic benefit should not overshadow responsible resource management.

Much of this potential can be encouraged and coordinated through the Nature Centre. Some considerations include:

- encourage use of paid guides;
- promote other community activities and opportunities to increase length of stay. Recent consumer research indicates that tourists enjoy a variety of activities. This is especially true if they are going some distance from home. There may be potential for packaging other local products and opportunities with a visit to the Natural Area. This would increase the enjoyment of the visitor and generate more local economic benefits; and
- promote sale of authenticated local themed crafts and artifacts. Some of these might be produced on-site or at the Nature Centre or even at the Natural Area, as demonstration projects. Markets for such products are very good.

In the future, opportunities for farm interpretation tours could be developed. Portions of the sales of these tours should go to the farmers willing to take part. Small kiosks could be developed for the Bird Observatory and Ducks Unlimited which would charge admission and would inform the visitors what they are all about. The Nature Centre should also be a place where services in the community are advertised and visitors can get direction to those that they require.

4.0 CONCLUSION

With the International Ramsar and National Nature Viewpoint recognition for waterfowl staging and production, the Beaverhill Natural Area has excellent potential, with increased public awareness, to increase its significance as a very major attraction. The stakeholders, in particular the adjacent landowners, have tremendous pride in this resource and, while they enjoy "showing it off", they want to see the resource protected and not degraded through overuse and improper use. This visitor management plan addresses management of visitors in such a manner that, while they enjoy themselves, proper behaviours are practiced so that the resource is not degraded. While "maximum" numbers of visitors are not addressed (the focus of this study is on behaviour), it is considered that small (10 maximum) guided groups will be most effective to view wildlife. The guides can have considerable influence on limiting numbers of people at any one time at the Natural Area. Experience will be required to determine numbers that are most effective in terms of visitor enjoyment and resource protection.

In considering visitor management, it is important to recognize that the Natural Area is continuously evolving and visitors, regardless of how few or well behaved, will have some impact. While this visitor management plan does not guarantee that the resource will remain intact, with proper implementation and commitment the plan will be effective in realizing both objectives of resource preservation and visitor satisfaction. This commitment and interest was evident through the contacts that were made with the stakeholders individually and in workshops during the preparation of this plan.

APPENDIX 1

ANNOTATED BIBLIOGRAPHY

ANNOTATED BIBLIOGRAPHY
BEAVERHILL LAKE

Provided below is a brief summary of material pertaining to the management of Crown Lands surrounding Beaverhill Lake. It is based on a review of information provided by Alberta Economic Development and Tourism, Alberta Environmental Protection, and Ducks Unlimited (Canada). The information is organized chronologically by category. The intent is to provide the reader with a summary of planning initiatives and projects undertaken in the area, pertinent to the development of a Visitor Use Management Plan for Lister Lake.

PLANNING DOCUMENTS

Integrated Resource Plan: Beaverhill Lake Land Use Plan. 1981. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division. Technical Report T/1-No. 5. 17pp.

The Beaverhill Lake Integrated Resource Plan was developed to provide "a forward thinking and comprehensive policy direction" so as to guide the preparation and implementation of detailed Local Development Plans . The document included two sections. The first describes the two phases of the Beaverhill Lake planning process and outlines the terms of reference and planning methodology used during Phase I deliberations. The second section outlines the policy and operating recommendations intended to guide the Phase II planning process.

Beaverhill Natural Area - Lister Lake Habitat Management Plan. 1987. Alberta Forestry, Lands and Wildlife, Fish and Wildlife Division. 20pp.

Habitat types and existing wildlife resources of the Lister Lake area are discussed in the plan including habitat management goals. The discussion also considers various ways in which public recreational activities could be accommodated and managed.

Beaverhill Lake Tourism Master Plan: Final Report. 1989. Prepared for the Town of Tofield by Coopers and Lybrand Consulting. 69pp, plus 11 appendices.

The objective of this study was to develop a master plan detailing concepts and market development opportunities for Beaverhill Lake as a national and international tourist destination, focusing on bird watching, while maintaining existing wildlife and agricultural values and resource uses. The final report proposed a Lister Lake access area, recommending upgraded access to Lister Lake along Secondary Highway No. 626, ending in a turnaround and parking and picnicking area.

Beaverhill Natural Area Draft Management Plan. 1991. Alberta Forestry Lands and Wildlife, Natural Areas Program. Pub. No.: I/442. 27pp.

This plan was prepared by Alberta Forestry, Lands and Wildlife and public users of the Beaverhill Natural Area in keeping with the land use plan outlined in the Beaverhill Lake IRP. The objective of the plan is to reduce or prevent unacceptable activities and resource conditions, and rehabilitate desirable conditions. The plan also establishes a process for cooperatively

managing the Natural Area among government and users.

Beaverhill Lake Interpretive Plan. 1994. Prepared for the Town of Tofield, Alberta Economic Development and Tourism, and Alberta Environmental Protection by Orchis Communication Design. 37pp.

This plan identified six goals associated with interpretive objectives for Beaverhill Lake and the strategies and mechanisms for doing so. Audiences, themes and concepts were identified including interpretive products.

INVENTORY DATA

Aerial Survey of Ungulates in the Beaverhill Lake Area, March 1983. Alberta Fish and Wildlife. 15pp.

This report contains preliminary results of winter aerial surveys conducted by Fish and Wildlife to determine the numbers and distribution of ungulates around the lake. Preliminary results found that the number of winter deer around Beaverhill Lake had substantially increased since the first survey was flown in 1974. Main wintering areas occur on the northeast, southeast and south sides of the Lake.

Beaverhill Lake Waterfowl and Nesting and Livestock Study. 1989, 1990 and 1991. Alberta Forestry, Lands and Wildlife, Public Lands Division, Range Management Section.

This work was initiated by the Beaverhill Local Development Committee and their concerns regarding the need to undertake a cooperative waterfowl nesting and livestock grazing study. The Range Management Section, with technical assistance from Alberta Fish and Wildlife, undertook nest searches of selected shorelines during a three year period. Nest density was greatest in the Natural Area and lowest on the Stauffer Grazing Lease. Nesting success was best on nesting islands and poorest in shrublands. Predation was the greatest cause of nest failure.

Beaverhill Bird Observatory: Ten Year Summary Report - 1980-1989. Published by Beaverhill Bird Observatory. Edmonton, Alberta. 46pp.

This report represents a summary of ten years of bird banding and monitoring at Beaverhill Lake by the Beaverhill Bird Observatory. Bird banding and sighting records date back to 1980 and provide a wealth of information on use of the area by migrating and breeding birds.

VISITOR MANAGEMENT ARTICLES

All of the following articles address visitor management techniques, models, and how to plan a visitor management strategy. US examples are used in some articles.

Hof, M., et. al. ***Getting a Handle on Visitor Carrying Capacity - A Pilot Project at Arches National Park*, Park Science.** Winter 1991. 3pp.

Graefe, A., et. al. ***Visitor Management Impact in Wildland Settings***. Paper presented at the National Wilderness Research Conference, Fort Collins, CO, July 1985. 8pp.

Stankey, G., et. al. ***The Limits of Acceptable Change (LAC) System for Wilderness Planning.*** 1985. United States Department of Agriculture, Forest Service. General Technical Report INT-176. 37pp.

Cole, D. et. al. ***Managing Wilderness Recreation Use: Common Problems and Potential Solutions***. United States Department of Agriculture, Forest Service. General Technical Report INT-230. 60pp.

VERP - A Process for Addressing Visitor Carrying Capacity in the National Park System. 1993. United States Department of the Interior, National Park Service. 19pp.

APPENDIX 2

LIST OF INTERVIEWEES
&
WORKSHOP ATTENDEES

INTERVIEWEES & WORKSHOP ATTENDEES
BEAVERHILL NATURAL AREA
VISITOR MANAGEMENT PLAN
JANUARY 1995

1. Bill Sears, Councillor
   County of Beaver

2. Roy Berg
   Beaverhill Lake Nature Centre

3. Wayne Holland
   Alberta Agriculture, Food and Rural Development

4. Blaine Burns
   Ducks Unlimited

5. Bob MacFarlane
   Ducks Unlimited

6. Bill Richards
   Alberta Parks Service

7. Bill Reynolds
   Alberta Economic Development and Tourism

8. Fred Wilton
   Alberta Community Development

9. Milo Stauffer
   Land Owner

10. Lawrence Kallal
    Land Owner

11. Jackie Kallal
    Town of Tofield

12. Jim Lange
    Edmonton Bird Club

13. Roy Fairweather
    Beaverhill Bird Observatory

14. John Folinsbee
    Alberta Environmental Protection

15. Cathy Rogers
Canadian Wildlife Service

16. Geoff Holroyd
Beaverhill Bird Observatory/Canadian Wildlife Service

17. Glen Reil
Landowner

18. Terry Kosinski
Alberta Environmental Protection

19. Peter Lee
Alberta Environmental Protection

20. Petra Rowell
Beaverhill Bird Observatory

21. Elizabeth Beaubien
Botanist

22. Robin Bovey
Bhern Executive

23. Hugh Campbell
Beaverhill Lake Nature Centre

APPENDIX 3

INTERVIEW FORMAT

INTERVIEW FORMAT
BEAVERHILL NATURAL AREA
VISITOR MANAGEMENT PLAN
JANUARY 1995

The following format is intended to serve as a generic guide for the interviews. Given the diverse backgrounds of the stakeholders, questions specific to each person interviewed will be developed prior to the interview and many will arise as the interview progresses. Some of the following questions may not apply to all interviewed.

Begin the interview by indicating the purpose of the interview as important to developing an understanding of the important issues, needs and management objectives for the Beaverhill Lake Natural Area.

1. Describe the history of your organization's involvement with Beaverhill Lake, with the South side, and in particular, the natural area.

2. What are the key issues from your perspective? Which are most important?

3. What do you see as the principal management objectives for The Natural Area, and relative to the south shore area? Which are most important?

4. What sensitive sites are you aware of? Which are more sensitive?

5. Access and circulation of visitors is a major issue. What are your thoughts on this? What are your preferences rergarding visitor access? How and where would you prefer to see visitors circulate through the natural area?

6. Other than access and circulation, what other methods would you like to see used to manage the visitors?

7. In terms of identified issues and management objectives, are there are factors that are useful as indicators of preferred conditions for the natural area. What do you think are some of the useful indicators?

8. Signs, brochures and other methods of communication, particularly for self-guided tours, are important to direct people and also to provide some degree of interpretation and education. What thoughts do you have on how that might be achieved for the Beaverhill Lake Natural Area?

9. Additional comments and questions.

APPENDIX 4

INTERVIEW SUMMARIES

Beaverhill Natural Area
Visitor Management Plan
Record of Meetings
February, 1995

The interview format served as a rough guide for interviews.
As much as possible, responses are organized by topic.
Comments are repeated when mentioned more than once.
Except where obvious, interviewees preferred some comments not be directly attributable to them (this was assured).

1. History of Involvement:

- Public Lands: Natural Area was originally in a cattle grazing lease. Then it was put under reservation with yearly leases. In 1986 it was agreed to convert it to a natural area
- Public Lands is still the land manager. They manage the site with input from Fish and Wildlife and from Natural Areas
- banding has been undertaken in the area since 1980;
- non-profit status for the BBO secured in 1987;
- greeted or saw 500 visitors in 1994;

2. Key Issues & Management Objectives/Concerns

- two key management objectives are resource protection and visitor satisfaction
- does not feel the resource is adequately being protected now
- does not feel visitors are getting a complete satisfactory experience now
- optimize people within the environment thereby creating a positive experience such that people want to come back for more and at the same time minimize the impact that people will have on the resource
- Fish and Wildlife act to keep people out as their way of protecting the resource. They are very difficult to deal with (e.g. waiting two years for a wildlife management plan that is still not available)
- this is a natural area in the domain of "public lands"; public access needs to be assured
- the public land definition and the attitude of Fish and Wildlife send out contradictory messages
- the Town wants to encourage more utilization of the area, but resource protection is key within that objective
- an objective is to monitor the effects that utilization will have on the area (realize that is very difficult since it is not easy to identify what the casual factors of a negative event might be (e.g. fewer Mallards)

- there are really too few people going there now to have any sort of negative impact, but there is no people management there now; people go but don't really know what to do
- that is a very good dugout that would not easily be moved, only place in pasture to get easy water and good bank stability
- retain the place as a jewel, don't treat it as an economic "gold mine" - fine line relationship between economics and environment
- road dust
- traffic and danger
- road condition
- best way to preserve the resource is to not have it as public land with public access - concern that public use will lead to degradation of the resource
- cattle use maintained diversity of the resource. With no cattle there is little diversity (e.g. fewer shorebirds because trees are encroaching on the shoreline
- the key issues/objectives are to:
  - maintain the resource
  - maintain the diversity of the resource
  - allow controlled access (level of use compatible with the resource)
- manage the site so public can enjoy it yet maintain the resource
- broaden season of use
- the mandate that DU have there is very important, it is necessary that whatever happens their mandate not be harmed
- a major issue is to enhance the viewing and creating interpretive vehicles that realize multi-use conditions at the site and immediate surroundings and the international resource designation
- the multi-use is a good example of partnerships that can be interpreted
- keep the BBO in there. Their activities and presence are very important to the stature of the site
- need for finalization of Fish and Wildlife's Habitat Management Plan, notably those aspects associated with habitat manipulation;.
- human use of the area and its affect on nesting waterfowl and subsequent predation;
- need to ensure that all dogs are leashed;
- on site foot traffic only;
- potential need to elevate the existing trail to accommodate periods of flooding;
- ensure that use of the existing road allowance is not encouraged, rather existing trails are used; and
- recognition that the site is too small to effectively sustain multiple use.
- BBO's primary focus is research;
- research is dictated by strict protocols
- research results are regularly published, e.g., BBO Ten Year Summary Report and Annual Reports;
- sedge meadows at southwest corner of the lake are used by Northern Harriers, Yellow Rails, Sora's and Marsh Wrens;

- predation of waterfowl nests is high most likely by skunks, weasels, coyotes and crows; and
- need to maintain the area as wildlife habitat.
- two types of monitoring activities by the BBO - migration monitoring and daily estimated totals
- BBO has a comprehensive list of regularly occurring bird species of the area;
- need to ensure that the use of the east side of Lister Lake is not encouraged as it provides important habitat for many different bird species - restrict visitor use to the west side of the lake.
- Habitat Management Plan in process of revision includes broad goals and objectives;
- need to manage the area to ensure wildlife production as identified in the Integrated Resource Plan;
- need to maintain and or enhance wildlife habitat diversity;
- Fish and Wildlife have in the past purchased land to remove grazing pressures from the lake shore;
- Fish and Wildlife is interested in establishing the primacy of the area for wildlife;
- need to improve the capability of the area for nesting waterfowl;
- need to improve overwintering habitat for deer;
- development plans must ensure that recreational uses are compatible with wildlife production; and
- concerned that the Natural Area doesn't become the single, major destination as the area can't sustain substantial increases in use and maintain its value for wildlife production.

3. Sensitive/Protected Sites & Wildlife Use

- shoreline very sensitive because of nesting and vegetation
- whole area is sensitive
- shoreline
- area at south end of Lister Lake extending from the east side of the lake to the west side.
- Beaverhill Bird Observatory
- Stauffer Grazing Lease (this is not necessarily a protected area but it is important that access and interference with the grazing operation be minimized).
- Virginia, Sora and Yellow Rails found in areas where the sedge is wet, can be encouraged to call from the weir by rubbing two stones together;
- not many large raptors in the study area due to absence of suitable mature trees, however, cavity nesting owls are present;
- best viewing is from the weir in early morning, thereafter birds move away from the weir and viewing is poor for subsequent viewers;
- when water levels were higher and mudflats closer, the BBO considered establishing a blind to shield birds from viewers

- lower lake levels in recent years have resulted in mudflats being much further from the weir and as consequence shorebirds and pelicans can no longer viewed from the weir;

4. Access and Circulation

- need to maintain service vehicle access, preferable around by bait station
- prefers the option of going around the outside of the dugout (South and East) rather than cut through the pasture and to have that access provided with a boardwalk with interpretation along the way
- have the road end along the East/West road, provide parking and then walk
- upgrade the road up to where the parking is to be, only with some gravel don't dig out and rebuild base to secondary highway base, monitor traffic and road conditions and at times may have to close a portion and make people walk further
- not sure of specific location of parking but in general area at road end and walk from there
- absolutely no driving in natural area
- until there is infrastructure in place for self guided hikes through the Natural Area, only guided tours should be allowed
- gravel or mow down grass trails in the Natural Area are O.K.
- likes the idea of a "circle" route linking along the N/S right of way
- landowner prefers to have the boardwalk access around the dugout (S/E) than to cut through the pasture
- if there was to be more traffic on the trail that cuts through the pasture something would have to be done to improve it. As it is the trail is degrading a people drive a bit to the side to have a smoother ride and it simply gets wider and deeper
- only the BBO and DUC and other required service vehicles should access the Natural Area - and even that with some controls
- very strong preference for parking visitors at road end and walking them around the dugout. That is least disruptive to cattle
- likes the idea of a full "loop" with N/S access along right of way - too difficult to move fence a bit to west and would require cutting trees - need that area to access north for farm - not wise to have people move through there with no fence separating cattle and people - much better to leave fence as is and have a hand groomed trail just inside the fence, but meandering and with upland interpretation along the way
- have a creative trail system
- prefers parking on South side of road, but if go on North will consider but want to negotiate a specific location that is least productive
- control use through groups and individual guides
- have boardwalk around the East and South side of the dugout with interpretation

- access to site:
  - 1st choice; park at road end and access around dugout E/S with boardwalk (round corner closer to dugout to make distance shorter a need for less boardwalk
  - 2nd; park at road end walk across pasture with fence on both sides and underpass for cattle to get to dugout
  - 3rd; park at road end and access across pasture with fence on one side and cattle prevented from going to dugout, with water pumped from dugout across to other side of fence for cattle
  - 4th; drive in across pasture and park by the gate at natural area entrance
- likes idea of loop around the road right of way N/S. Prefers that a hand cleared trail be developed inside (East) of the current fence, and with interpretation
- have only a service road access, and even then it should not be abused. Some of the service vehicles that drive in are not necessary, they are only for convenience and do damage especially when it is wet
- use other (East) side of Lister Lake to disperse use
- east side access is possible right up to Lister lake by car on an ungravelled, sandy road allowance
- cost aside, the preference is to go around the dugout (cost may be a factor)
- parking should be at the end of the road on the east side of the treed area, currently designated for parking
- picnic area in the treed area next to the parking
- If possible connect east and west areas by a "bridge" at the weir so people can walk across the causeway to access east side
- have a big "loop" to the south of Lister Lake so people can connect the two sides at the south end. this would create another circle walking tour
- access around the south side of Lister Lake will be difficult, because of water. To do totally around would be a long walk and through pasture. Access is however possible, but will take more work and expense
- there should be no public driving into any of the areas, walking only
- continue to allow deer hunting on the east side of Lister Lake, but control so there is only foot access. Hunting on foot only, not motorized vehicles, including ATVs
- for the last two years cattle have been going around the fence and continuously grazing on the east side of Lister Lake. This need to be controlled
- west side: It is recommended that a parking lot to accommodate 50 vehicles and a bus turnaround be constructed.
- east side: a parking lot should be constructed to accommodate 20 vehicles and a bus turnaround. The east parking lot should be approximately half way down the road alignment, the area fenced and gated so that access is controlled.
- uncontrolled vehicle access must be stopped.

- service access can be provided on an alignment north to the existing bait station and then east through the Stauffer lease into the Beaverhill Lake Natural Area. It is recommended that the only vehicle access by Ducks Unlimited and BBO. Concern was expressed with respect to restricting this access during the fall because of the conflict with the bait station. However, Roy Berg stated that it would be possible to have permission for certain individuals to use this access. This should not be a public access.
- no parking should be allowed adjacent to the existing entry gate.
- there must be a program put in place to maintain the existing ecology. If the ecosystem continues to develop naturally, it will effect the bird species in the area.

5. On-Site Opportunities

- west area: A 2 m wide granular trail should be provided for all weather access.
- mound #1 is the preferred viewing area; viewing opportunities at the weir are also good. At both locations screening is required to hide the viewers silhouette.
- a connecting trail south of the BBO can be established as a granular trail system.
- development of a trail on the west side of the natural area within the road right-of-way should be considered.
- pedestrian access to the natural area gate should be east of the existing Stauffer dugout.
- east side. Limited development of this area should be considered; however the mound at the west end of the 626 provides good viewing opportunities.
- if any structures that are built; i.e., viewing fences, they should be open to the south to allow viewing of the flyways.
- consideration of a tower could be made at a midway point between viewing mound # and the weir. This will provide improved viewing opportunities; however, this will have to be screened, complete with a roof, to eliminate silhouettes.
- the west parking should be located in proximity to the existing 626 road right-of-way and visitors will be required to walk to the site.
- a picnic site and toilet facilities should be developed adjacent to the parking areas with a small rest area immediately inside the entrance to the west natural area.

6. Management Techniques Other Than Access and Circulation

- Town want guided tours and are pushing hard for this
- try to pre-sell guided tours
- should have a step on guide always available
- can't have guided tours for everyone who comes, some will independently walk through. Require some form of education for proper ethics and behaviour and so they can know how to learn from and enjoy the experience
- no dogs, not loose and not on leash

- the new Nature Centre (when built) needs to be THE funnel (staging area) for people to access the Natural Area. This will provide opportunity to direct people in proper manner and to provide education on ethics of use and what to see and expect. It also provides opportunity to get them to go with an "hopefully available" guide or to pre-book a tour "soon departing". It's also a way of introducing them to the gift shop and services available in the community.
- get a person (e.g. summer student) for tours, big and small groups, per-booked and spontaneous, to monitor conditions, people and activities at the Area, to assist with clean-up, nature centre activities, etc.
- no dogs allowed
- limit people - no 75,000 per year
- likes idea of having someone take people through and make it a more enjoyable experience for them
- if people are to pay they will require value in the experience -people tend to value more what they pay for
- don't want the place really promoted to increase numbers too much
- develop interpretation (upland) on the East side of Lister Lake and bring people there to disperse use and allow a greater diversity of interpretation. Make the East side a positive integral part of the area
- now that it is public land, the only control is the level of development to the site
- allow controlled grazing to maintain the diversity of the resource - otherwise we lose diversity
- parking to be in the form of a widening at the end of the road
- use the currently designated parking area for the major picnic site
- have a minor picnic site and rest/staging area at gate just inside the Natural Area
- through license of occupation give the Nature Centre more responsibility (e.g. custodian) for the site
- make maximum use of guides to manage people and activities and educate on use
- no dogs - period
- direct and encourage the Nature Centre as the focal point of the visit start
- move cautiously
- not a good idea to set up deer blinds and bait deer for viewing on East side only to make them easy "picking" when hunting season starts
- there should be restrictions on service vehicle use - it is inconsistent to walk on and interpret on a service vehicle road
- need to have a custodian in there for the area (what is the paper work that is necessary to have this happen?)
- do not allow bikes, foot traffic only
- have most picnic areas and vault toilets in well located rest (sandwich) stops in the natural area
- to keep pressure off area can have some off site viewing (e.g. some landowners are happy to hold some water back in their hay meadows to create habitat that attracts birds, also good viewing area at Amisk Creek - birds like to nest on sloughs)
- birds are attracted to pot holes and those are away from the lake

- believes interpretation should be at the nature centre with special guided tours days to limit people impact on area

7. Signs and Communication

- likes signs that say this is where you are at; go this way to -; so much further to go to get to -
- signage must be very attractive so you want to read it
- no intrusive signage
- avoid negative signage
- make messages both interpretive and control simultaneously
- need signage, but do not pollute the place with it
- likes idea of no negative signage
- don't have signs along the highway encouraging and directing people to the Natural Area. The casual "drop-by" person will not appreciate it and is likely to be the abuser
- need signage, but not a profusion, cautious, don't overload, directive and informative, not obtrusive, but attention getting. Orientation map sign is critical. Have information signage at entry points.
- permanent signs at established viewing areas
- signs are important for an interpretive function
- without signs can be less satisfaction and more negative impact
- signs are important for first time visitors
- have self-guided tour materials from Nature Centre and charge people for this (do not have audio tapes)
- have a kiosk at the BBO to explain what they are all about, how they relate to the area, and how they tie in internationally
- don't have all the signs "blend" in because they can't easily be seen. Coloured graphics can help explain
- the interpretation and the signage at the first viewing area is important to getting the people to go on

8. Operational issues

- in the event that large groups go to the site, the Beaverhill Bird Observatory should be notified in advance so that they can have people on hand to explain the operation.
- do not allow vehicles to park immediately adjacent to the natural area gate.
- no vehicle parking at the Beaverhill Bird Observatory.
- limit vehicle access to the site.
- do not allow vehicles in areas where there are wet ground conditions (creates braiding and rutting).

- concern about random picnicking and parties in the brush area at the east and west ends of 626.
- the wood lot south of 626 (west side) should not be removed as this is a Cooper's Hawk nesting area.
- repair of fencing to restrict uncontrolled cattle access.
- it may be possible to allow fall cattle grazing in the west natural area to control the woody shrub materials that encroach.
- controlled burning should be considered as the grasslands are now dominating.
- it was agreed that pedestrian access to the site should be positioned east of the dugout so the dugout does not have to be modified. A fence can be installed to contain the areas.
- all weather access should be provided as well as the ability for balloon tire wheel chairs.
- a trail should be constructed on the west side of the natural area. It was suggested that this be constructed inside the existing fence which will require some brushing and clearing; however, a meandering trail can go through this area. Reasons for this are:
  - the ability to complete a loop
  - during windy days this is a protected area and also provides the opportunity to view woodland birds
- consideration of a trail south of Lister Lake to provide a pedestrian link between the east and west natural area.
- BBO needs to maintain vehicle access to the observatory to ensure provision of supplies; and
- concerned about substantial increases in number of visitors to the area.

9. Additional Information

- Snowgoose Festival raised $7,000 in revenue
- souvenirs sell very well
- need to improve gift shop to realize potential benefits
- see farm interpretation as a "neighbouring" and/or "management" technique for/to the Natural Area as something that could possibly have commercial potential in the future
- so far it's been nice, because people who come out use respect
- if people go to Francis Viewpoint they'll only go once, but they'll come back to the Natural Area
- Francis Viewpoint is good only at "swan and migration" time
- there was a fire on the East side of Lister lake two summers ago that removed a lot of underbrush and the use of caterpillars for a fireguard will have created a trail system
- there are some traditional uses on East side (e.g. hunting cabin - with guests guided in) that must be respected
- have "kits" and binocular rentals available through the nature centre

APPENDIX 5

OBJECTIVES, INDICATORS, METHODS OF EVALUATION

Beaverhill Natural Area
Visitor Management Plan
Objectives (O)
Indicators (I)
Units of Measure (U)
Methods of Evaluation (M)
Management Strategies (S)

These were developed on the basis of the individual interviews of the many stakeholders, and a review of the literature. The first workshop addressed the definition of management objectives for the Natural Area as well as the identification of key issues. The key issues are not labelled as key issues in this appendix, rather they are defined as the **"objectives"** and these are essentially statements of desired conditions. They are presented below by key topic area. This listing was then used to rate and rank the importance of objectives and methods of evaluation. This was done by the stakeholders at a final workshop. Those results are presented in the appendix that follows.

I OBJECTIVES THAT ADDRESS SOCIAL ISSUES

1. O have all weather road access to parking, but not highway standard, and not disruptive to residents along road

I
1. gravel condition & quantity
2. dust level
3. ruts
4. water accumulation/drainage

M
1. visual monitor road condition, especially when wet
2. visual monitor dust levels
3. ask land owners along route about conditions and dust levels

2. O safety on route from Town to parking area

I
1. accidents
2. near accidents
3. speed
4. traffic levels
5. stopping along road to view

M
1. speed control and monitor (radar), keep record
2. record accidents and near events
3. establish a time series traffic count
4. ask landowners who live along and utilize access roads

3. O **to have a litter free environment at Natural Area and along access roads**

I
1. litter in ditches along access roads
2. litter at parking and picnic areas
3. litter in Natural Area

M
1. visual observation of litter amounts and frequency
2. measure quantity of litter collected from different areas
3. ask landowners who live along and utilize the route

4. O **avoid having landowners be disrupted in their activities or at their residences by visitors to the Natural Area**

I
1. complaints from landowners
2. numbers of visitors who stop at farms along the way
3. numbers of visitors who drive or walk off access roads onto deeded or lease land that they are not to access

M
1. visual observation
2. ask landowners who live and control land along the routes and in the general area
3. observation of gates left open, or signs removed or defaced

5. O **minimize conflict with other uses - make all uses compatible and interpretive**

I
1. interfere with BBO activities
2. cattle/farm activity with visitor encounters
3. trespass and gates left open
4. property damage
5. hunter/visitor conflict

M
1. record complaints from all sources
2. record incidents reported
3. observe incidents and record
4. periodically interview BBO and farmers to identify encounters and concerns
5. monitor hunting activity on east side of Lister Lake

II OBJECTIVES THAT ADDRESS VISITOR EXPERIENCES

1. O visitor satisfaction

I
1. expressions of satisfaction
2. repeat visits
3. duration of visit
4. areas/activities visited/participated

M
1. observation casual comments (provide incentive for visitors to exit via the Nature Centre)
2. random exit surveys
3. observation of visitor activities/participation
4. guide record comments
5. random measure duration of visits

2. O minimize pressure on area, yet encourage visitation and maintain visitor satisfaction

I
1. use of other viewing areas (e,g, Francis Viewpoint)
2. use of East side of Lister Lake
3. number of people in Natural Area on West side of Lister Lake at any one time
4. total number of people using all areas at any one time
5. visitors viewing at private landowner sites

M
1. monitor numbers of visitors to all locations (e.g. Francis Viewpoint, East side of Lister lake, West side of Lister Lake, picnic areas, parking areas)
2. record total visitation, at sites and through nature centre
3. record number of private landowners that are encouraged to "groom" sites for wildlife
4. count number of people who visit private landowner sites

3. O optimize economic opportunities

I
1. employment created
2. wages generated
3. expenditures in community

M
1. measure wages
2. measure employment
3. measure direct expenditures at Nature Centre and other charges for services (e.g. guiding)

4. do occasional random survey of businesses in the community to identify how they feel they benefit economically from visitation

4. O communicate with effective non-obtrusive signage and brochures

I
1. attention visitors pay to signage
2. effectiveness of signage in visitor use ethics and constraints
3. effectiveness of signage in proper direction
4. effectiveness of signage in educational interpretation

M
1. observe attention paid to signage
2. observe and record confusion remaining after or created by signage
3. randomly survey visitors to obtain feedback on various aspects of signage and other communication tools

5. O broaden season of use

I
1. more summer use
2. more winter use
3. visitor satisfaction other than migratory times

M
1. measure use at different times, at sites, at Nature centre
2. measure access road traffic
3. observe visitor satisfaction comments
4. survey visitors for off-season satisfaction

6. O provide an educational/interpretive experience for visitors

I
1. use by educational institutions
2. purchase of educational interpretive materials from the Nature Centre
3. use of interpretive materials when at the site

M
1. measure use by educational groups
2. record visitor comments
3. question on random surveys
4. observe use of interpretive materials
5. record sales on interpretive materials
6. observe time at interpretive signage

7. O practice appropriate visitor behaviours and ethics

I
1. noise disruption
2. lack of consideration to others (crowding, interruption)
3. stepping off paths

4. posturing to get attention of wildlife
5. inappropriate consumption of food and beverages

M
1. observation
2. complaints
3. question on random surveys

III BIOPHYSICAL OBJECTIVES

1. O maintain or enhance the nature and quality of study area habitats

I
1. coverage of willow versus grasslands
2. coverage of poplar versus willow
3. age of willow stands
4. age of poplar stands
5. mudflat location, distribution and size
6. hectares of open water and water depth

U
1. changes in coverage of willow versus grasslands.
2. changes in coverage of poplar versus willow
3. changes in age of willow stands
4. changes in age of poplar stands
5. changes in mudflat location, distribution and size
6. changes in hectares of open water and water depth

M
1. prepare an ecological map base to include vegetation, topography, soils, and drainage characteristics of poplar forest, willow scrub, shoreline areas of grass, sedge and rush, emergent aquatic vegetation of bulrush and cattail, mudflats, and extent of open water (20 days, $15,000)**
2. document the age of study area habitats, i.e., young, mature and old (2 days)**
3. map changes in the extent and distribution of study area habitats using available aerial photography, the ecological map base and a program of field work (10 days, $7,000)**
4. Document changes in the age of study area habitats (4 days)*

S
1. use the ecological base map for resource assessments purposes and to facilitate comprehensive planning and ongoing monitoring of study habitats and wildlife use
2. allow the area to evolve naturally
3. control growth of senescent willow
4. control the spread of poplar into areas of willow

2. O **maintain and improve the capability of study area habitats to support waterfowl**

I
1. species presence or absence during migration and the nesting season
2. use of seasonally important areas
3. number of breeding pairs
4. nest success
5. brood size

U
1. changes in species presence or absence during migration and the nesting season
2. changes in use of seasonally important areas
3. changes in number of breeding pairs
4. changes in nest success
5. changes in brood size

M
1. review BBO and DU records to determine commonly seen migrants and nesting waterfowl, as well as rarely recorded species (3 days, $1,000)**
2. identify and map seasonally important areas for staging, nesting, feeding, loafing and moulting waterfowl using the ecological map as a base (20 days, $3,000) **
3. counts of number of staging birds during spring and fall migration on Lister Lake (in conjunction with mapping)**
4. determine number of indicated breeding pairs using Lister Lake (18 days, $3,500)*
5. determine nest success (24 days, $6,000)*
6. determine the average brood size (20 days, $4,500)*

S
1. prepare an annual report documenting waterfowl use and changes in use
2. provide nesting platforms and sites for nesting waterfowl
3. breakup and manage extensive stands of emergent aquatic vegetation

3. O **conduct regular monitoring to document changes in waterfowl use and response to disturbance**

I
1. seasonal use patterns
2. flushing patterns

U
1. changes in seasonal use patterns
2. changes in flushing patterns

M
1. conduct an annual review of BBO records to determine changes in waterfowl species in the general area, specifically a review of weekly sight records (3 days, $1,000)**
2. annually monitor use of nesting, feeding, loafing and moulting sites by waterfowl to determine if changes occur (10 days, $1,500)**
3. measure visible response to disturbance, i.e., no visible response, moved away, flushed at 100m, at 50m, at 20m;during low and high use periods, i.e., versus weekdays and weekends (ongoing, minimal costs) **

S
1. include as part of the annual waterfowl report waterfowl response to disturbance
2. develop educational programs that encourage a sense of appreciation and respect for waterfowl and appropriate behaviours
3. establish buffers around sensitive sites
4. consider seasonal restrictions

4. O maintain and improve the capability of study area habitats to support birds other than waterfowl

I
1. species presence or absence during migration and the nesting season
2. use of seasonally important areas

U
1. changes in species presence or absence during migration and the nesting season
2. changes in use of seasonally important areas

M
1. review BBO records to determine commonly seen migrants and nesting birds, as well as rarely recorded bird species (3 days, $1,000)**
2. identify and map seasonally important areas for migrating and breeding birds using the ecological map base (10 days, $1,500)**
3. counts of number of shorebirds using mudflats in the vicinity of the weir during low and high use periods.(20 days, with BBO help)**
4. counts of number of pelicans using loafing bars in the vicinity of the weir(to be done in conjunction with shorebird counts, with BBO help)**
5. rails heard calling in the vicinity of the weir (in conjunction with shorebird counts, with BBO help)**
6. use of raptor nest sites on both the west and east sides of Lister Lake (presence, absence, number of young)(7 days, $1,000)**

7. use of owl nest sites (presence, absence, number of young) (9 days, $1,000)**

S 1. prepare an annual report documenting bird use and changes in use
2. maintenance and addition of existing nest boxes (10 days, plus disbursement costs of approximately $2,000)**

5. O conduct regular monitoring to document changes in bird use and response to disturbance (birds other than waterfowl)

I 1. seasonal use patterns
2. flushing patterns

U 1. changes in seasonal use patterns
2. changes in flushing patterns

M 1. conduct an annual review of BBO records to determine changes in bird use in the area specifically a review of weekly sight records and MAPS (Monitoring Avian and Productive and Survivorship Data) data to identify trends (e.g., declines in grassland species and increase in warblers) (3 days)**
2. response to disturbance of shorebirds using mudflats in the vicinity of the weir during low and high use periods (10 days, in conjunction with counts)**
3. response to disturbance of pelicans using loafing bars in the vicinity of the weir (in conjunction with counts)**
4. response to disturbance of raptors at the nest site (7 days, in conjunction with counts)**
5. response to disturbance of owls at the nest sites (9 days, in conjunction with counts)**

S 1. include as part of the annual bird report bird response to disturbance
2. establish buffers around sensitive sites
3. develop educational programs that encourage a sense of appreciation and respect for forest birds and appropriate behaviours

6. O maintain and improve the capability of study area habitats to support deer

I 1. species presence or absence
2. browse use
3. browse abundance

U
1. changes in species presence or absence
2. changes in browse use
3. changes in browse abundance

M
1. review Wildlife Management records pertaining to deer use (1 day)**
2. identify and map seasonally preferred areas and less regularly used areas (1 day)**
3. conduct an inventory of study area use by white-tailed and mule deer
4. determine browse abundance and use, using standard visual estimating techniques (7 days, $2,000)*

S
1. prepare an annual report documenting deer use and changes in use
2. clear small areas of forest to improve winter browse production and the quality of deer wintering habitat (20 days, plus disbursements of approximately $8,000)

7. O conduct regular monitoring to document changes in deer use and response to disturbance

I
1. seasonal use patterns
2. flushing patterns

U
1. changes in seasonal use patterns
2. changes in flushing patterns

M
1. monitor changes in annual deer use.
2. measure visible response to disturbance, i.e., no visible response, moved away, flushed at 100m, at 50m, at 20m; during low and high use periods, i.e., weekdays versus weekends

S
1. include as part of the annual deer report deer response to disturbance
2. develop educational programs that encourage a sense of appreciation and respect for deer and appropriate behaviours

8. O maintain and improve the capability of study area habitats for amphibians and reptiles.

I
1. species presence or absence
2. number on breeding adults
3. number of egg masses
4. number of larvae

U
1. changes in number of egg masses
2. changes in number of larvae
3. changes in number of breeding adults

M
1. annually estimate the relative abundance at known preferred sites during the spring and summer (20 days)**
2. identify and map expected, seasonally important areas (1 man-day)**

S
1. provide additional hiding cover such as logs, rocks, tiles
2. develop educational programs that encourage a sense of appreciation and respect for amphibians and reptiles and appropriate behaviours

9. 0 encourage public appreciation and respect for the study area's biological resources

I
1. visitor participation in educational programs
2. considerate visitor restraint regarding disturbance to wildlife

M
1. monitor participation in educational programs
2. monitor visitor behaviour regarding disturbance to wildlife
3. randomly sample visitors to obtain feedback

S
1. develop a visitor code of ethics
2. develop educational programs encouraging appreciation and respect
3. develop educational programs about significant natural and cultural features
4. develop working relationship with the BBO regarding educational tours

IV PHYSICAL FACTORS

1. O avoid and minimize disturbance of key species areas when locating trails

I
1. use of trails provided
2. disturbance to sensitive areas

M
1. record disturbance to species
2. monitor reduction of species
3. monitor decrease in visitor numbers/survey reasons

2. O maintain existing drainage patterns (during facility construction)

I
1. (maintain existing) extent of wet habitats (taking into account seasonal fluctuations)
2. (no) major drainage excavations on surrounding sites
3. (no further areas) flooding
4. (nNo abrupt change in) species composition

M
1. record change in existing drainage patterns
2 record change in wet habitats; species composition
3 observe surrounding land use activities

3. O decrease impact of human waste (visual smell)

I
1. litter in receptacles vs around site
2. amount of waste and frequency of collection
3. use of receptacles
4. voiding in non-designated areas

M
1. litter contamination to sensitive habitats
2. record amount of litter
3. record areas of indiscriminate littering
4. observe how fast litter accumulates in proper receptacles

4. O provide good viewing opportunities while minimizing disturbance factors

I
1. comments from visitors
2. visitors use areas provided
3. disturbance of sensitive areas
4. return visits and reputation

M 1. record disruptions to sensitive areas
2. record number of return visits
3. observe circulation patterns

5. O provide water access (while avoiding sensitive sites)

I 1. loss of water edge habitats
2. use of access areas provided

M 1. record disturbance to water edge habitat
2. observe visitor use of non-designated access

6. O provide separate service access from pedestrian access to minimize pedestrian/vehicle conflict

I 1. vehicle/pedestrian encounters
2. damage to pedestrian routes
3. improper vehicle use of site

M 1. observe how well users are following vehicle restrictions
2. how much use service access receives
3. record problems with new access route

7. O provide rest areas on site

I 1. comments from visitors
2. use of facilities provided

M 1. random sample of visitors/comments
2. record number of people using facilities

8. O provide pedestrian access (trails) to appropriate areas of the site; improve accessibility and decrease random walking

I 1. condition of trails during year
2. wheelchair accessibility
3. use of designated trails

M 1. monitor dryness of trail
2. observe circulation patterns
3. record number of comments from wheelchair users
4. document number of new "desire" pathways

APPENDIX 6

RATINGS
DESIRED MANAGEMENT CONDITIONS
AND METHODS OF MONITORING

RATINGS
DESIRED MANAGEMENT CONDITIONS
BEAVERHILL NATURAL AREA

Ratings were obtained from 13 stakeholder participants at a day long workshop. The ratings are not representative of the landowners, or of Town of Tofield, or other area residents, or any of the groups represented. The ratings are the composite representation of the stakeholder group who, throughout this study, were the primary source of information. The ratings were requested on a scale of 1 (lowest importance rating) to 4 (highest importance rating).

Social Conditions:

The desired social conditions were rated as were the methods of measuring (monitoring) associated with each desired condition. The ratings are as follows:

3.4 no disruption in the farming activities of the farmers or at their residences;

- 1.69 visual observation
- 3.85 ask landowners who live and control land along the routes and in the general area
- 2.86 observation of gates left open, or signs removed or defaced

3.4 minimized conflict between the multiple users of the resources.

- 3.46 record complaints from all sources
- 3.00 record incidents reported
- 2.25 observe incidents and record
- 3.54 periodically interview BBO and farmers to identify encounters and concerns
- 2.00 monitor hunting activity on east side of Lister Lake

3.3 a litter free environment along the road and at the Natural Area;

- 2.75 visual observation of litter amounts and frequency
- 2.67 measure quantity of litter collected from different areas
- 3.08 ask landowners who live along and utilize the route

3.1 an all weather road access to the natural Area, but not highway standard or paved;

- 2.77 visual monitor road condition, especially when wet
- 2.46 visual monitor dust levels
- 3.62 ask land owners along route about conditions and dust levels

2.9 safety on the route between the Natural Area and Town;

- 2.46 speed control and monitor (radar), keep record
- 2.15 record accidents and near events
- 2.77 establish a time series traffic count
- 3.54 ask landowners who live along and utilize access roads

Visitor Experience Conditions:

The methods of evaluation (monitoring) for the desired visitor experience conditions are presented below, along with the ratings that the stakeholder group assigned to each of the associated monitoring measures. These formed an important basis for the recommendations and strategy presented in the report.

3.8 minimize pressure on area, yet encourage visitation and maintain visitor satisfaction

- 3.83 record total visitation, at sites and through nature centre
- 3.62 monitor numbers of visitors to all locations (e.g. Francis Viewpoint, East side of Lister lake, West side of Lister Lake, picnic areas, parking areas)
- 3.15 numbers of people who visit private landowner sites
- 3.00 numbers of private landowners that are encouraged to "groom" sites for wildlife

3.5 provide an educational/interpretative experience for visitors

- 3.54 record visitor comments
- 3.46 measure use by educational groups
- 3.25 question on random surveys
- 3.08 record sales on interpretative materials
- 2.69 observe use of interpretative materials
- 2.31 observe time at interpretative signage

3.3 practice appropriate visitor behaviours and ethics

- 3.85 complaints
- 2.85 question on random surveys
- 2.83 observation

3.1 visitor satisfaction

- 3.31 random exit surveys
- 3.00 observation of visitor activities/participation
- 3.00 guide record comments
- 2.92 observation casual comments (provide incentive for visitors to exit via the Nature Centre)
- 2.08 measure duration of visits

2.4 communicate with effective non-obtrusive signage and brochures

- 3.54 randomly survey visitors to obtain feedback on various aspects of signage and other communication tools
- 3.00 observe and record confusion remaining after or created by signage
- 2.77 observe attention paid to signage

2.1 optimize economic opportunities

- 3.23 measure direct expenditures at Nature Centre and other charges for services (e.g. guiding)
- 2.92 do occasional random survey of businesses in the community to identify how they feel they benefit economically from visitation
- 2.17 measure employment
- 1.83 measure wages

1.8 broaden season of use

- 3.23 survey visitors for off-season satisfaction
- 3.15 measure use at different times, at sites, at Nature centre
- 2.85 measure access road traffic
- 2.83 observe visitor satisfaction comments

Physical Factors

ranking and ratings of key objectives related to physical factors

1.	Protect key species areas trail location	(3.9)
2.	Maintain Existing Drainage	(3.8)
3.	Decrease Impact of Human Waste (Litter, Toilets)	(3.8)
4.	Minimize Random Pedestrian Access	(3.3)
5.	Provide Good Viewing Opportunities	(3.0)
6.	Water Access/Viewing Areas	(3.0)
*7.	Separate Service Access	(2.4)
8.	Provide Rest Areas On Site	(2.3)
7.	All Weather Pedestrian Access	(2.2)

* The intent of this objective was not fully understood until after the plans were reviewed. With the new understanding it was agreed this objective was more important and should be ranked higher.

APPENDIX 7

OPINION OF PROBABLE COST

BEAVERHILL NATURAL AREA
OPINION OF PROBABLE COST

ITEM	DESCRIPTION	UNITS	QTY.	UNIT PRICE	TOTAL
1.00	WEST ENTRANCE				
1.01	Parking Lot (gravel)	sq. m	2000	$10.00	$20,000.00
1.02	Bus Turnaround/Lay-by	sq. m	2800	$10.00	$28,000.00
1.03	Wheel Stops	ea	50	$25.00	$1,250.00
1.04	Washroom Facilities	ea	1	$20,000.00	$20,000.00
1.05	Gates and Related Fencing	ea	2	$2,000.00	$4,000.00
1.06	Tree Planting	ea	30	$250.00	$7,500.00
1.07	Turf	sq. m	120	$3.00	$360.00
1.08	Culvert	lin. m	12	$90.00	$1,080.00
2.00	WOOD BOARDWALK/BRIDGE	lin. m	390	$100.00	$39,000.00
3.00	UPGRADE ROWAN'S ROUTE	lin. m	1600	$40.00	$64,000.00
4.00	ONSITE SIGNAGE	lump sum	1	$15,000.00	$15,000.00
5.00	TRAILS				
5.01	Gravel Trails	lin. m	3120	$20.00	$62,400.00
5.02	Natural Trails (Loop A & B)	lin. m	1530	$12.00	$18,360.00
6.00	RAISED TRAIL SECTIONS				
6.01	Raised Gravel Trails	lin. m	600	$25.00	$15,000.00
7.00	VIEWING TOWER AND PLATFORM				
7.01	Platform (1.5m high)	m	1.5	$1,500.00	$2,250.00
7.02	Tower (10.0m high)	m	10	$1,500.00	$15,000.00
8.00	REST/VIEWING NODES				
8.01	Viewing Screens (2)	m	175	$60.00	$10,500.00
8.02	Benches	ea	10	$700.00	$7,000.00
8.03	Trash Receptacles	ea	5	$500.00	$2,500.00
8.04	Picnic Tables	ea	4	$1,200.00	$4,800.00
8.05	Toilet Facilities	ea	1	$20,000.00	$20,000.00
9.00	SERVICE ACCESS TO BBO	lin.m	3300	$40.00	$132,000.00
9.01	Texas Gate	ea	1	$2,500.00	$2,500.00
10.00	WOODED AREA PICNIC SITE				
10.01	Picnic Tables	ea	5	$1,200.00	$6,000.00
10.02	Natural Trails	lin. m	800	$12.00	$9,600.00
10.03	Trash Receptacles	ea	2	$500.00	$1,000.00
10.04	Benches	ea	12	$1,100.00	$13,200.00
11.00	Extend Fence	lin. m	400	$10.00	$4,000.00

BEAVERHILL NATURAL AREA
OPINION OF PROBABLE COST

ITEM	DESCRIPTION	UNITS	QTY.	UNIT PRICE	TOTAL
12.00	EAST ENTRY				
12.01	Parking (10 cars)	sq m	500	$10.00	$5,000.00
12.02	Bus Turnaround	sq m	2800	$10.00	$28,000.00
12.03	Wheel Stops	ea	10	$25.00	$250.00
12.04	Toilet Facilities	ea	1	$20,000.00	$20,000.00
12.05	Gates	ea	2	$2,000.00	$4,000.00
12.06	Gravel Trail	lin. m	800	$20.00	$16,000.00
12.07	Viewing Screens	m	100	$60.00	$6,000.00
12.08	Signage	ea	1	$5,000.00	$5,000.00
12.09	Extend and Repair Fence	lin. m	750	$10.00	$7,500.00
				SUB TOTAL	$598,050.00
				15% Design Contingency	$89,707.50
				TOTAL	$687,757.50

APPENDIX 8

GENERAL SITE EVALUATION MATRIX

● Compatible (if it does not apply, leave blank)
◎ Moderately Compatible
○ Not Compatible

SITE EVALUATION MATRIX

RECREATIONAL USES	Picnic	Hiking or Walking	Dog walking/running	Snowshoeing, x-country skiing	Snowmobile	Skating	Day Use	Overnight Camping	Education	Motorcycle, ATV	Bicycle Paths	Pedestrian Trails	Natural Regeneration/Preservation	Walks & Trails	Lookout Nodes	Bird Watching Blinds	Interpretive Displays	Meditation/Relaxation	Bird Observation/Feeding	Isolated Family Picnic	Passive Relaxation	Active Use	Park Identification	Transition Zones	Public Washrooms	Concessions	Interpretive Signage	Administration Compound	Parking and Service Access
	FAMILY			WINTER ACTIVITIES				SUMMER ACTIVITIES					NATURAL PRESERVE								LANDSCAPE AREAS				SUPPORT FACILITIES				
FAMILY																													
Picnic																													
Hiking or Walking																													
Dog walking/running																													
WINTER ACTIVITIES																													
Snowshoeing, x-country skiing																													
Snowmobile																													
Skating																													
SUMMER ACTIVITIES																													
Day Use																													
Overnight Camping																													
Education																													
Motorcycle, ATV																													
Bicycle Paths																													
Pedestrian Trails																													
NATURAL PRESERVE																													
Natural Regeneration/Preserv.																													
Lookout Nodes																													
Birdwatching Blinds																													
Bird Tagging Stations																													
Interpretive Displays																													
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SUPPORT FACILITIES																													
Public Washrooms																													
Concessions																													
Interpretive Signage																													
Administration Compound																													
Parking/ Service Access																													

● Applicable
◎ Moderately Applicable
○ Not Applicable

SITE EVALUATION MATRIX

RECREATIONAL USES	DETERMINING FACTORS																			CONSEQUENCES												
		Existing Facilities	Wildlife Habitats	Field and Forest	Riparian and Marsh	High Quality Forests	Unique Physiographic Features	Unique Geological Features	Good Bedrock/Soil Foundation	Vehicular Access	Pedestrian Access	Slope	>= 80% - Erosion	26-79% - minor trails	11-25% - trails	10% - Roads, pedestrian , bicycle paths	% - wet areas		Impede public access and use	Noise pollution	Visual blight	Habitat deterioration/fragmentation	Water pollution	Slide	Erosion	Soil compaction	Flood damage	Removal of existing natural barriers/buffe	Change naturally occurring local conditio	Access to sensitive ecosystems	
FAMILY																																
Picnic																																
Hiking or Walking																																
Dog walking/running																																
WINTER ACTIVITIES																																
Snowshoeing, x-country skiing																																
Snowmobile																																
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Concessions																																
Interpretive Signage																																
Administration Compound																																
Parking/ Service Access																																

DEVELOPMENT OPTIONS

Scale 1:5000 March 1995

LEGEND:

VIEWING SCREEN

WASHROOM/REST AREAS

BOARDWALK

NATURAL AREA BOUNDARY

VIEWING TOWER

GRAVEL TRAIL

NATURAL TRAIL

RAISED TRAIL

FULL SUPPLY LEVEL F.S.L.

HLA CONSULTANTS
BUTLER KREBES & ASSOCIATES INC.
GAIA CONSULTANTS INC.

north

BEAVERHILL NATURAL AREA VISITOR MANAGEMENT PLAN

FIGURE 4

VIEWING SCREEN #3
PLATFORM
CESS
WEIR
EXTEND FENCE
BBQ
FUTURE LINKAGE
BOARDWALK
TOWER
VIEWPOINT #2
ILLOW PLANTING
ING SCREEN
LISTER LAKE
MOUND #4
FUTURE TRAIL

INFORMAL TRAILS
RAVEL TRAIL
GATE
PARKING (10 CARS)
BUS TURNAROUND
SIGNAGE
GATE
HWY 626

OPPORTUNITIES & CONSTRAINTS

Scale 1:5000 March 1995

LEGEND:

VIEWING OPPORTUNITIES

WET AREAS

DUGOUT

NATURAL AREA BOUNDARY

AREAS TO PROTECT

FULL SUPPLY LEVEL

HLA CONSULTANTS
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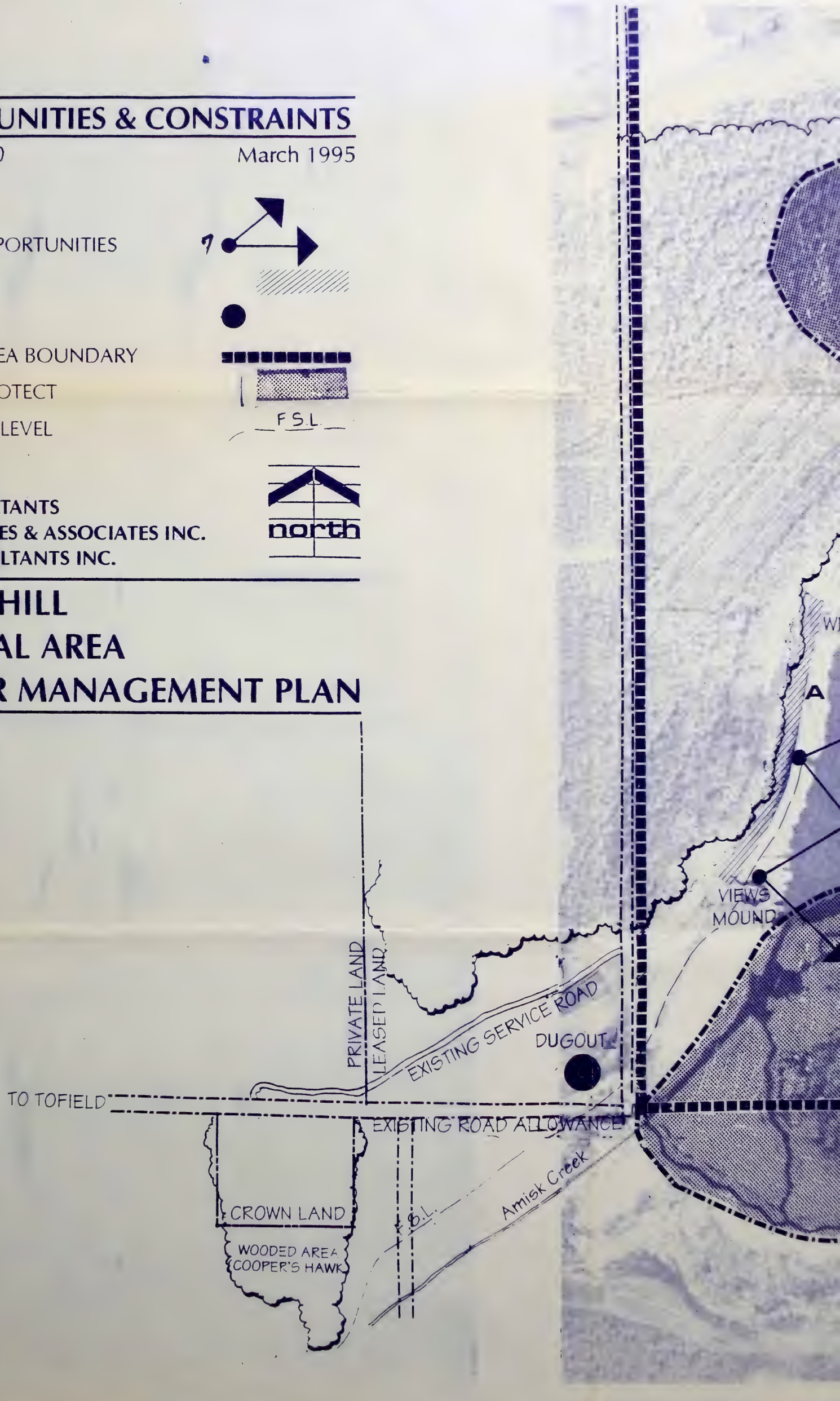
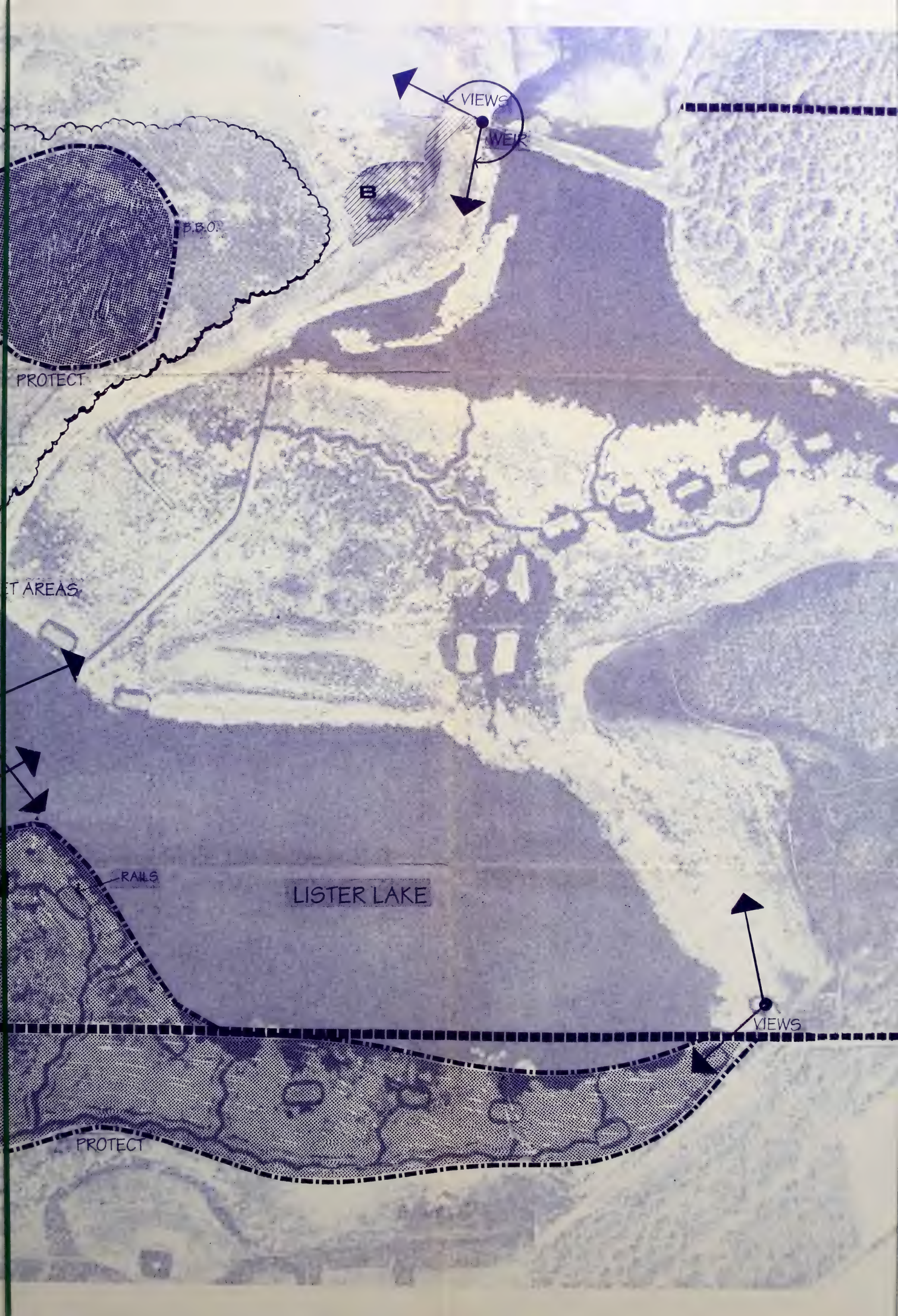
GAIA CONSULTANTS INC.

BEAVERHILL NATURAL AREA VISITOR MANAGEMENT PLAN

FIGURE 2




VIEWS
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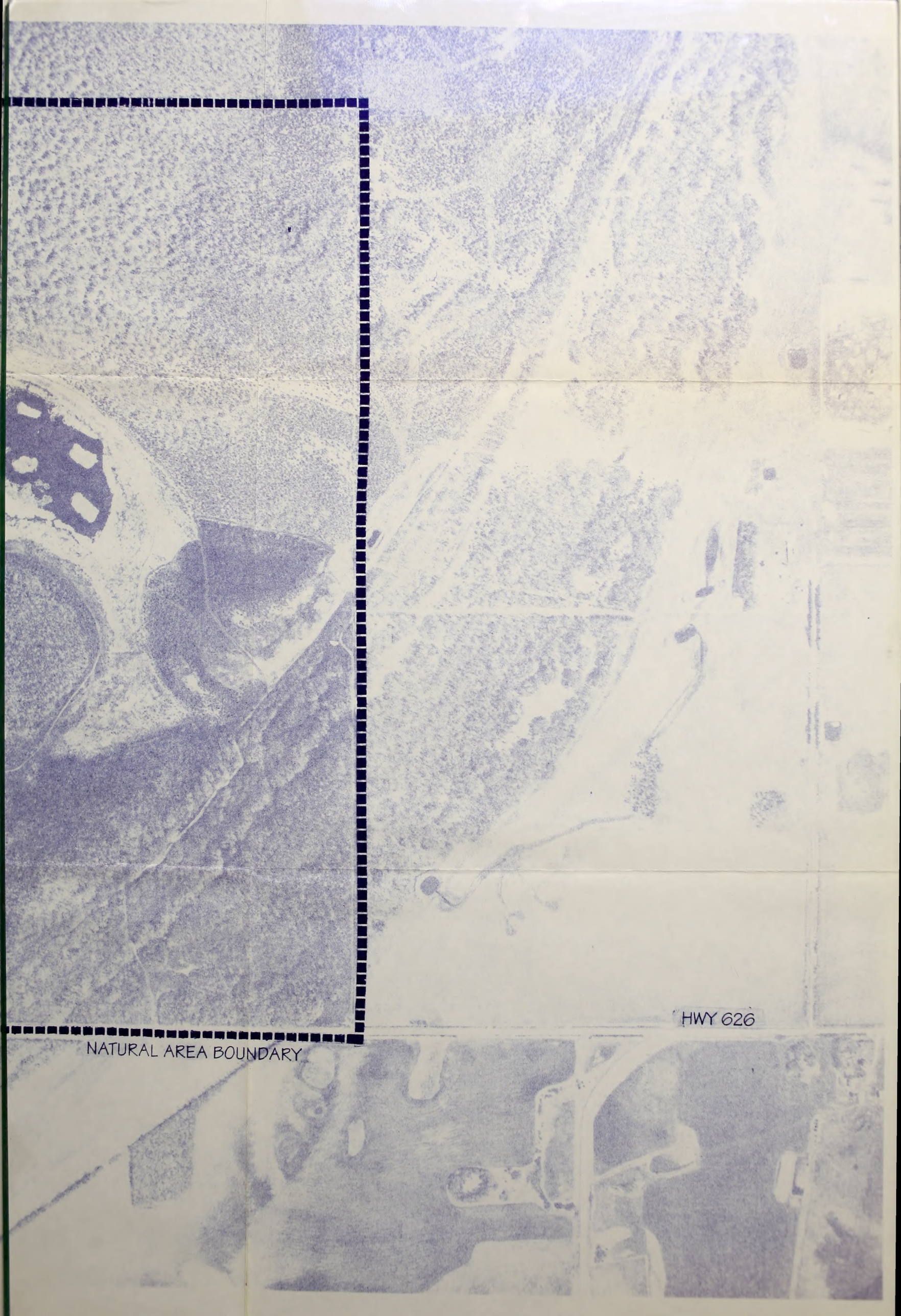
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HWY 626

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